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BLOOD EFFUSIONS BETWEEN THE RETINA AND VITREOUS BODY.

By F. C. Hotz, M. D., Chicago.

PROF. OF OPHTHALMOLOGY, CHICAGO POLICLINIC.

Of all the hemorrhages occurring in the interior of the eye the effusion of blood between the retina and vitreous is the most interesting kind and deserves our special attention; for as this effusion usually spreads over the region of the macula it causes a sudden and complete loss of vision, which naturally frightens the patient in no small degree.

Now when we know that the absorption of the blood will completely remove the obstruction to vision and restore the sight in the course of a few weeks, the great practical importance of a correct diagnosis of these cases is obvious; for if we recognize the true nature of these hemorrhages we can, at once and with the greatest assurance, give a favorable prognosis and relieve the uneasy mind of our patient from all anxiety about his sight.

The hemorrhage in question does not seem to occur very often; or at least very few reports have been published, and the text books, with few exceptions, say nothing about it. Recently an excellent paper on this subject has been published by Dr. O. Haab, of Zurich, reporting six cases of these blood effusions between retina and vitreous; in four cases it was located at the macular region, but in one case it was at the nasal side of the papilla and in one case even further away, in the lower portion of the fundus.

In twenty years of practice I have seen but three cases of this kind: one in 1880, one in 1882, and one in 1884.

Case. I.[1] Mrs. M. B., æt. 42, lost the sight of her left eye quite suddenly in April, 1880, under the following circumstances: While menstruating she stood with bare feet in very cold water; the menses ceased at once, and two days later while working over an embroidery she became dizzy, felt a peculiar sensation in her left eye, and a few minutes later discovered she could not see with that eye. One week later (April 22) I examined the eye and found the central region of the fundus occupied by a very large hemorrhagic effusion the outline of which described a complete circle, its diameter being about three times that of the optic disc. Its inner border just touched the temporal margin of the papilla; its lower border covered a part of a retinal vein. This round blood effusion was dark red, but there was a visible difference in the shade of the color between the upper and lower portion, being much darker red in the lower portion, as if the blood had "settled." The papilla showed a normal appearance; but along the ascending branch of the retinal vein I noticed several small blood streaks on either side of the blood vessel.

The patient could see light, but it looked reddish brown, "as if she was looking through blood," as she said.

R. E. had slight myopia and V=$\frac{20}{xx}$.

Under the use of a mild aperient (elixir rhamnus frangula) the blood was soon absorbed so that on May 24 V. was $\frac{20}{xx}$ — fundus appeared absolutely normal.

Case II.[2] Mrs. L. B. æt. 57, suffering from dyspnœa and bronchitis, had inflammation of the lungs in June, 1882. During a paroxysm of coughing the sight of the L. E. became entirely obscured, but in the course of two months it gradually returned. On the 28th of July, the same sudden obscuration occurred to the R. E., and on August 19, 1882, I examined the patient. R. E. central scotoma of great extent, allowing only peripheric perception. Media clear; papilla normal; at its temporal margin an hemorrhagic effusion which extends far beyond the macula; its outlines describe a perfect circle; its diameter is at least three times that of the papilla; the lower portion much darker colored than the upper one.

L. E., H. $\frac{1}{49}$, V = $\frac{20}{xxx}$; clear media; in the fundus half way between the optic disc and the macula, two very small white streaks, like minute scars; the one streak lies in a line with the upper margin of the optic disc, and runs upwards and outwards, and the other one lies in a line with the lower margin of the disc and runs obliquely downwards and outwards. No other anomaly was found in this eye.

This was the only time I saw the patient; but I was informed she gradually recovered the sight of her right eye, and died of apoplexy, in May, 1883.

Case III. Charles D., æt. 32, a healthy workman, was sitting at the railroad depot waiting for a train, when suddenly he felt something like a hair in his left eye. This sensation lasted a few minutes only; but when he closed his right eye he found the sight of the left eye obscured by a dense dark brown cloud.

Five days later (Nov. 1, 1884) he came to my office. R. E. normal in every

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[1] Reported in the Am. Journal of Ophthalmology. 1884.

[2] This case was reported with the first one as "retinal hemorrhages of unusual size in the region of the macula, with perfect recovery of vision." As by a retinal hemorrhage usually is meant an effusion of blood into the substance of the retina, it is quite likely the above title has led many readers to suppose I located these hemorrhages in the retinal substance. I wish, therefore, to state that I called them retinal hemorrhages because their source was undoubtedly a retinal blood vessel, but as to the location of the effusions I said then, "we must assume that the blood was effused over the inner surface of the retina, forming a blood disc between retina and vitreous body."

respect; V. $= \frac{20}{xx}$ L.E.V. still darkened by a large reddish brown cloud through which a gas jet could be dimly perceived; this cloud, however, did not cover the entire field of vision; in the most peripheric area of the field the light was seen in its true color and the moving hand was readily perceived. The external appearance of the eye was normal; the pupil responded to light very well; refractive media were clear. The ophthalmoscope showed the following interesting state of the fundus (see Fig. 1). The region of the macula was

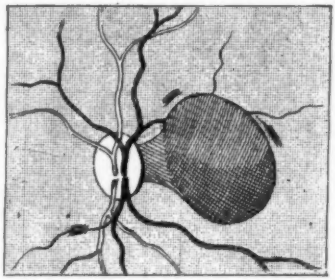

FIG. 1.

occupied by an enormous blood effusion of an ovoid shape and dark red color, its lower portion being a few shades darker than the upper portion; its outlines very distinct, and sharply defined against the back ground. The effusion did not reach quite up to the temporal margin of the papilla; but as in the narrow space between the papilla and the blood clot the retina was coated over by a thin and lighter colored film of blood? I presume the hemorrhage extended originally fully up to the papilla, but a part of the blood had already been removed by absorptions by the time I examined the eye. Near the upper circumference of the hemorrhage a branch of the ascending retinal vein disappeared behind the blood and reappeared at the opposite side. In the course of this vein there were found two small blood streaks, and two similar ones were found in the track of a smaller vein branching off from the descending retinal vein towards the inferior nasal section of the fundus. These small blood streaks had all the appearance of the ordinary minute retinal hemorrhages. The papilla appeared perfectly normal in color and contour; and the retinal vessels showed the normal caliber.

In this case the absorption was remarkably active, for in one week (Nov. 8) all the small blood streaks and also the thin blood film in the space between papilla and hemorrhagic effusion had entirely disappeared, and the large effusion itself had been reduced to less than one-half its size (see Fig. 2). And after two more weeks every trace of this enormous hemorrhage

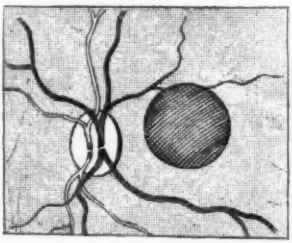

FIG. 2.

had been wiped out; the macular region presented a perfectly normal appearance and the sight of the eye was restored.

The similarity of symptoms in all these cases is very striking: In an apparently healthy eye the sight is, suddenly and without any premonitory symptoms, reduced to perception of light which appears colored as if seen through a brown or reddish medium. The refractive media of the eye, however, are found perfectly clear; but the ophthalmoscope reveals as the cause of the blindness a large effusion of blood occupying the region of the macula and reaching close up to the temporal border of the papilla.[1] Its shape is round or oval; its outlines very regular and sharply defined against the background, and its color is dark red, usually showing a deeper shade in the lower portion. Retinal blood-vessels which happen to lie in the path of this hemorrhage are completely hidden by the blood. In the neighborhood of the large blood effusions a few small blood streaks are often found; but there is never any evidence of inflammation or displacement of the retina. In the course of four weeks or more the blood is absorbed, the sight restored and no trace of any lesion can be found in the fundus, except sometimes a few minute white streaks (in the left eye of my second case), or glistening points (in one of Haab's cases).

In regard to the *etiology* all writers mention menstrual disturbances among the causes of these hemorrhages, and in my first case the sudden suppression of menstruation was unquestionably the cause.

In my second case the disturbances in the circulatory system, usually attending chronic bronchitis and dyspepsia of older people, may properly account for the occurrence of the intraocular hemorrhage. But in my third case I cannot find any plausible explanation for the bleeding.

The *treatment* may, of course, require various remedies according to the various general conditions which may be found as causes of the hemorrhage. But there are two points our treatment should cover in every case — no matter what the supposed cause — we must enjoin our patient to avoid bodily exertions and mental excitements, and we may promote the absorption of the extravasate by the administration of mild aperients or diuretics.

About the *actual location* of these blood effusions here described one would not think it possible there could be any difference of opinions. But when in 1888 Dr. Long reported a case of this kind to the Ophthalmological Society in London, his view was opposed by some who held the blood came from a choroidal vessel and was collected *under* the retina. But

[1] In some of Haab's cases the blood spread even over a portion of the papilla.

a subretinal blood effusion of such size would necessarily push the retina forward; retinal blood-vessels crossing the site of the hemorrhage would not (as our pictures show) be cut off from view at the very border of the effusion, but they would be seen to rise over the margin and to pass in front of the blood clot, just as we see the retinal vessels rise and pass over a choroidal tumor which has crowded the retina from its normal position. Furthermore a subretinal hemorrhage does not explain why the patient should see the light with a red or bloody tint, unless we assume the blood or its coloring matter has penetrated the external layers of the retina and got in front of the perceptive elements. But if these delicate layers of the retina had been invaded by the subretinal fluid it would be difficult to understand how they should have escaped any permanent lesion and how the vision should have been so perfectly restored.

This perfect recovery of vision is also the strongest argument against the assumption of the blood effusion being into the substance of the retina. We know even very small hemorrhages in the macula invariably leave more or less permanent disturbance of vision according to the greater or less number of rods and cones which were displaced and destroyed by the invading blood; how then should the structure of the macula escape complete destruction by a blood infiltration as extensive as our ophthalmoscopic pictures show it. It would be more than miraculous, and we do not count on miracles in our science. If the hemorrhage is neither under nor in the retina, it must be located in front of it. And this pre-retinal location explains most satisfactorily every symptom, every feature of the clinical picture of our cases.

It accounts for the circular form of the effusion, because there is nothing in the space between retina and vitreous that would prevent the blood from spreading out uniformly in all directions. It accounts for the sudden disappearance of the retinal vessels at the border of the hemorrhage, because they are hidden from view by the blood clot.

It accounts for the red color to the light because the patients really see the light through a film of blood.

It accounts for the complete recovery of vision, because the structure of the macula is not disturbed in the least, but its function is only suspended temporarily by an opaque curtain, as it were, and as soon as this curtain is removed by the absorption of the blood, the sight returns to its former acuteness.

36 Washington street.

THE RELATIVE IMPORTANCE OF ASTIGMATISM IN THE PRODUCTION OF ASTHENOPIA.

Second Paper.

By S. D. Risley, M. D.

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My first paper on this subject, which appeared in the July number of the Annals, has met with marked expressions of favor in a group of congratulatory letters, thanking me for what the writers were pleased to regard as a protest against erroneous teaching. In it I had taken occasion to controvert certain views more or less widely entertained both abroad and in this country, and which had been recently set forth in a vigorous paper by my esteemed colleague, Professor Roosa of New York. Dr. Roosa has prepared a rejoinder to my paper in defense of his position, and with a courtesy equaled only by the ability of the author in all the arts of controversy, and his extensive knowledge of the subject under discussion, has placed a proof of his paper in my hands, in order that my reply, if any, could appear in the same issue. I regret that Dr. Roosa has not entered more fully upon the discussion of the principles involved. A careful study of my first paper will show that the arguments there presented so briefly, contain the necessary basis for any further contention over the real question at issue, viz: as to what is to be regarded as the refraction of the normal eye. The management of asthenopia by the ophthalmologist will largely depend upon his views on this point. There can no longer be any question as to the fact that hypermetropic refraction with or without astigmatism is the rule for the human eye. I have myself been severely criticised over the high percentage of hypermetropic refraction, and low percentage of emmetropia found in the schools of Philadelphia (Trans. Penn. State Med. Soc., 1880). That these and other statistics have shown the hypermetropic to be the ordinary eye, is a very different matter, however, from demonstrating that it is therefore the normal eye. It might be claimed with equal force that a normal or proper morality could be determined by majorities. My contention is that notwithstanding the great frequency of hypermetropia

and hypermetropic astigmatism, it is nevertheless a departure from an anatomical standard and therefore a defect. Like many other physical defects, when present in low degrees it may not interfere with the proper performance of function in all cases, even in meeting the requirements of a complex civilization, but this will depend in large measure upon the degree of the defect on the one hand, and the environments of the individual, *e. g.*, the state of health, the nature of the burdens assumed, etc., on the other. Dr. Roosa's remarks in the second paragraph of his reply on page 240, would indicate that he has overlooked my own work in the schools of Philadelphia (loc. cit.). The leading motive in that extensive and painstaking investigation was a search for the normal eye. The views expressed above find a. sufficient basis in the teachings of that investigation which a steadily extending professional experience has served only to confirm and strengthen. Space does not permit a too extensive review of that work, but in it will be found many facts bearing directly upon this discussion, which furnish a sufficient answer to Dr. Roosa's claim that emmetropia is an "ideal" condition, and "scarcely exists," while hypermetropia is the refraction of the normal eye. In the first place emmetropia was found in rather more than eleven per cent. of the whole number of eyes examined. It may, however, be objected that notwithstanding the great care exercised to exclude error that these figures could be verified only by the thorough use of a mydriatic. Fortunately, however, they have received confirmation in Dr. Roosa's own published work (vid. Trans. Am. Oph. Soc. 1878 page 388: "The Relations of Blepharitis Ciliaris to Ametropia"). In this admirable paper, written to enforce his views on the same subject presented to the International Ophthalmological Congress, in 1876 (vid. Trans. 1876, page 143), which had been controverted by Hotz, he details forty-eight cases with six emmetropes. In the original paper thirty-one cases were reported with five emmetropes. Again (loc. cit., page 462), fourteen nonasthenopic eyes examined under thorough atropinization three emmetropes are reported. To summarize: in these three papers ninety-three cases are reported with fourteen emmetropes or 15 per cent. Most of these were examined under atropia, but nevertheless he finds a higher percentage of emmetropia than I found without a mydriatic, less than 12 per cent., in the schools of Philadelphia, thus incidentally verifying the general correctness of my statistics. In the light of these figures, emmetropia cannot be regarded as only an "ideal" condition. It certainly exists. Regarding the claim that hypermetropia is the refraction of the normal eye, Dr. Roosa

writes with much force in the paper above cited, in reply to his opponents, "I cannot agree with those who have objected to my views, who argue that slight degrees of hypermetropia seldom give rise to asthenopia. My experience is just the other way." The correctness of his views then expressed are verified in the most forcible manner by the curves in which I sought in the report of my school work to graphically convey the teaching of that work. It is there demonstrated that although emmetropia occurred in so low a percentage of the whole, that nevertheless the emmetropic eye enjoyed the highest acuity of vision, was comparatively free from pain, and from disease of the ocular tunics, and therefore withstood the strain of school life better than the eyes with myopic or hypermetropic refraction. These tables also reveal the fact that in both of these forms of refraction error, when astigmatism is also present the percentage of pain and disease still further increases. It will be seen by this that even in 1880 the relative importance of astigmatism in the production of asthenopia was forcibly demonstrated by these statistics, so that Dr. Roosa's teachings on this point in his recent paper are entirely in accord with my own views. The curves, however, show also the serious importance of hypermetropia alone in causing asthenopia and disease, since 50 per cent. of all the eyes with hypermetropia were asthenopic. Furthermore, a careful study of the figures from which these curves were constructed shows unmistakably a fact, which also finds demonstration in the daily routine of professional work, viz., that the lower the degree of simple hypermetropia, *i. e.*, the more nearly the eye approached to emmetropia, the lower the percentage of asthenopia, and the concomitant pathological states.

It is upon these facts that for twelve years I have with much confidence based the claim which has controlled my management of asthenopia, viz., that the emmetropic eye was not only the model, but the normal eye. It does not signify in this discussion that "thousands of hypermetropes do not suffer from asthenopia." Even were such a statement open to demonstration it is not with these that we have to do. Such persons do not come to me for relief. I have myself demonstrated, as pointed out above, that 50 per cent. of even young hypermetropes using their eyes at school were asthenopic, and it is well known that as the range of accommodation diminishes with advancing years, so must the relative eye strain increase. The question to be decided is, what shall we do for the hypermetrope who suffers? Dr. Roosa's practice and my own probably do not differ in the general management of the neurasthenic individual with hyper-

metropia, but my experience has certainly differed widely as to the value of correcting glasses for these patients. The neurasthenia makes the glasses a more certain necessity, and they often prove a valuable therapeutic measure, inasmuch as they remove, if properly adjusted, one cause of irritation to the nervous system. When they fail to do this I have long since learned that there was some error in the correcting glasses. They must not be carelessly prescribed. Much of the dissatisfaction over the use of glasses by these persons with delicately poised nervous systems has resulted from the careless measurement of the existing error of refraction. As the health improves, or the existing retino-choroidal irritation subsides under the use of glasses, my patients are frequently able to lay them aside except for continued near work. I, therefore would not feel that I had done all for the relief of my patient, until his hypermetropia had been carefully corrected, certainly not if it approximated "2. D." I surely would not ask such a patient to quit college or counting-room because of his fronto-occipital headache or other reflex symptoms, until I had failed to secure his comfort by the correction of any considerable defect of refraction or ocular balance.

Regarding the value of the ophthalmometer in the determination of existing astigmatism, I have no contention with Dr. Roosa, as he states his views in his reply to my paper. That it is a valuable aid I have had wide opportunity to demonstrate. Until I had determined its proper place in the armamentarium of my office I carefully recorded its findings in hundreds of eyes side by side with painstaking mydriatic corrections, where they still stand in my case book mutely teaching both the helpfulness of this admirable instrument and its inadequacy to take the place of other methods as was so strongly urged in Dr. Roosa's first paper. Like all other instruments of precision it is of course valueless in the hands of the inexperienced, as Dr. Roosa suggests, and becomes more and more valuable with increasing experience; in a word, "with a trained observer behind it" only are the best results obtained. But unfortunately no perfection of skill in its use can justify the statement that, "It is only in the rare cases of mixed astigmatism that the ophthalmometer does not make a short and sure road to a complete determination of the refraction." This statement on my part is urged on the basis of an extended, painstaking use of the instrument and having fully in view only what it is intended to do. The ophthalmometric examination forms a part of my record in every suitable case. That it is a method of great value I freely concede, and would not think seriously of dispensing with its use. Indeed, I would strongly

urge all those who have not employed it to do so, but that it removes the necessity for mydriatic corrections, does not in a very large group of cases accord with my experience.

It was my intention to publish in brief one hundred consecutive instances of its use, comparing its findings with the glasses chosen under a mydriatic, and giving the highest acuity of vision, but while writing these lines the published experience of Dr. Black of Denver, a pupil of Dr. Roosa (vid. Archiv. Ophthal. vol. XXI, No. 3, July, 1892), came to my notice and removes the necessity for such publication, since his published cases accord so nearly with my own experience in a very much larger group. The percentage of error cannot but throw an element of uncertainty around the cases in which the findings of the instrument are correct until the correctness is proved by subjective examination.

In very many cases the astigmatism is quite accurately estimated both as to the degree and the direction of the principal meridians of corneal curvature; but alas! in very many others its findings are approximations only in both respects, while in others the astigmatism if in low degree and especially if "against the rule," is entirely overlooked. To those who have been accustomed to accurate refraction work and not content until a visual acuity equal to $\frac{6}{VI}$ has been secured — and by $\frac{6}{VI}$ I mean not only one letter in this line but the ability to see even the details of the confusion letters — will not be contented with approximate manifest corrections even when aided by the findings of the ophthalmometer.

1722 Walnut street.

THE CLINICAL HISTORY OF CENTRAL CIRCUMSCRIBED CHORIO-RETINITIS.

By Dr. H. Gradle.

CHICAGO.

It has been the fortune of the writer to observe successively three cases of an intra-ocular disease which can be properly called *circumscribed central chorio-retinitis.* In the three observations the essential features of the disease repeated themselves so fully, that I cannot but consider this a typical affection separate and distinct from other forms of choroiditis. I have not been able to find in the literature any description applying accurately to the cases observed by me.

While some of the modern text-books on ophthalmology and ophthalmoscopy mention a form of exudative choroiditis limited to the posterior pole of the eye, none describe the symptoms presented in my cases. With the exception of DeWecker and those who either quote him or copy his classification, authors do not distinguish in principle between the diffuse, chronic forms of choroiditis and an acute, non-progressive lesion limited to a circumscribed area of the fundus. Even Hutchinson [1] in his exhaustive review of rare forms of choroiditis does not mention as a separate disease the form observed in my cases.

DeWecker [2] describes as "Chorio-retinitis centralis" or "Choroiditis disseminata circumscripta," a form of disease comparable to my observations as to the site of the lesion, its limitation to a single plaque and its general clinical history, although he is not very definite in his description of the course of the disease. But in his description the spots of exudation were distinctly tumefied and prominent, while in my observations they were not raised above the plane of the retina; his plaques were yellowish or brownish, mine were glistening white; his were not accompanied by the striking symptoms of uveal irritation which characterized mine, and finally his exudations terminated in circumscribed atrophy of the choroid, while those in my patients left scarcely any permanent lesion in the choroid coat although they had injured

[1] Proceedings of the Ophth. Society of the U. K., British Med. Journal, Jan. 31st, 1889.

[2] Krankheiten der Choroidea in Graefe and Saemisch's Handbuch d. ges. Augenheilkunde, 1876, vol. IV, p. 621, and in Ocular Therapeutics, Eng. edition by Forbes, 1879.

the retina. De Wecker evidently bases his description largely on an article by Sichel (fils).[1]

A closer comparison shows that Sichel's cases differed from mine in all details, agreeing only in the general course of the affection. Apart from the differences referred to in connection with DeWecker's description, my patients complained of no photophobia, pain or tenderness in the eye-ball, had no distortion of retinal images (metamorphopsia) and were not conscious of a positive scotoma (*i. e.* as a dark spot) either during or after the disease.

In an essay on the influence of various forms of choroiditis on sight, O. Bergmeister [2] describes accurately the symptoms presented by my cases as observed by him in at least five instances[3] in several years' observation of the large material at the Vienna clinic. He also refers to similar older descriptions by Bader, Galezowski and Hutchinson (not accessible to me). But my experience differs radically from his (and from the authors quoted) when he attributes the disease invariably to syphilis as the cause, and even more when he considers this form of inflammation as but a complication in the course of disseminated choroiditis. His cases were also of a more malignant character than mine.

The disease as observed in my patients causes a sudden blur which increases during one to two weeks, then remains stationary one to three weeks, and finally diminishes. During its height sight may be reduced to the perception of fingers at short range. The peripheral vision, also involved originally, soon becomes normal, and there remains a relative central scotoma, which permanently reduces the visual acuity to a variable extent. There are no other subjective symptoms.

The ophthalmoscope shows the essential lesion to be a chorio-retinal infiltration, not involving the anterior retinal layers, as the vessels are seen intact where they run over the plaque. The affected area was never raised above the plane of the normal retina. The irregular shaped spot appears chalky white without sharp border and is not originally surrounded by any pigment fringe. Its size is about one-sixth to one-third that of the papillary area. It was found in every instance between papilla and macula bordering on the latter, either above or below the horizonal meridian. Small "satellites" in the form of faint chorio-retinal foci adjoined it. In front of the infiltrated plaque the ophthalmoscope showed a glistening which later on could be traced to the existence of a transparent reflecting

[1] Memoire pratique sur la choroidite circonscrite, Annales Oculistiques, 1872, vol. 47, p. 130.
[2] Archiv. f. Ophthalmologie, XX 2, p. 95.
[3] He is not quite clear whether this was all he saw.

membrane in the vitreous close to the membrana limitans. There were besides loose membranous shreds throughout the vitreous with some haze in the posterior portion over the affected part of the retina.

Besides the localized infiltration there was evidence of diffuse disease of the uveal tunic. In every case there was the deposit on the posterior surface of the cornea, known as keratitis punctata. In No. II. this lesion was the predominating one at first. In No. I. it was slight but very distinct, while in No. III. it could easily have been overlooked on account of its insignificance. In Nos. I. and II. there was a very slight transient venous congestion of the ciliary vessels; in No. III. the eye was always pale. Case II. had involvement of the iris, as shown by its discoloration and the faint deposits left on the lenticular capsules, but both of the other patients were free from iritic manifestations.

In No. I. there existed from the start an inflammation of the papilla, which gradually extended into the retina up to its extreme periphery, but subsided without permanent change (except in the central area). In No. III. the retina was normal when first seen, became œdematous and turbid in a narrow zone around the disc about the second week of observation, terminating, however, in complete recovery. In No. II. no part of the fundus was involved beyond the characteristic perimacular lesion.

The chorio-retinal lesion reached its full extent within the first few days. After a further stationary period of from 3 to 6 weeks retrogressive changes can be observed. About this time there was in every case evidence of choroidal disturbances in the vicinity. The adjoining small faint spots of chorio-retinitis referred to as "satellites" became more distinct or even increased slightly in size for a few days, after which time they also began to decline. The other symptoms of choroidal irritation had also subsided and the eyes gradually returned towards the normal state. The infiltrated area lost its whiteness slowly and assumed nearly the color of the fundus, but without shrinking in size. The satellites became less distinct and a pigment fringe which now began to form around the chorio-retinal lesion, subsequently bleached so as to become but very faint. One year later the site of the disease was recognizable only by the slight bleaching and discoloration, with some indications of pigment proliferation around it. A scotoma, however, remains, but the patient is only conscious of diminished distinctness of sight, not of any *blad* spot.

We have, therefore, a disease of acute onset, self-limited

duration, but slow disappearance of the lesions, inevitably deranging the function of the retinal centre.

It is always one-sided and according to my experience is not subject to relapses.

As to its cause nothing could be found in the local condition, the health or the state of adjoining parts in Nos. I. and III., to account for the trouble. In No. II. there existed a carious tooth which had probably caused some lymphangitis under the cheek and had led to abscess of the antrum. The immediate clearing of the cornea and the vitreous after the extraction of the dental stump and the opening and irrigation of the antrum, suggests a causal relationship. *None of the patients had syphilis.*

The disease is evidently localized in the choroid, as indicated by the general uveal irritation and the subsequent pigmentary changes. The interference with sight shows that also the external layers of the retina are involved, while the inner layers containing the vessels are not infiltrated. The glistening of the recent plaque suggests a disturbed state of the membrana limitans (without opacity). The limitation of the inflammatory process to a circumscribed area of the fundus, with disturbance of nutrition in the uveal tract and the vitreous point to an infectious origin of the disease. It does not seem improbable that the infectious material enters by way of the short posterior ciliary arteries. An embolus would not cause necrosis or infarction in the choroid on account of the anastomosis of its vessels, but if such an embolus were infectious, we would expect an inflammatory process in the very locality where it was clinically observed.

The following are the condensed histories:—

I. March 9, 1890. Mrs. M., 35 yrs. In fair health, except some uterine displacement. Complains since one week of blur of the R. eye. No pain or other annoyance. No known cause and no history of syphilis.

The left eye is normal. The right eye cannot count fingers beyond one foot distance. It shows very slight venous stasis over the sclera and slight enlargement of the pupil. There is a membranous shred in the clear vitreous. High degree of choked disc, with turbid swelling extending just beyond the edges of the papilla. No hemorrhages. Inward and slightly downward from the macular region there is a plaque of chalky whiteness without sharply defined edge, irregular in shape, about one-fourth papillary area in size. Retinal vessels passing over the edge of this area are clearly defined. No other diseased condition can be found in the eye or in the system. The urine is normal. Treatment: rest, darkness, sod. salycilat. 1.0 every 4 hours.

The next day $HgCl_2$ and KI were prescribed in average doses.

5th day. Vision unchanged. The ciliary stasis has disappeared entirely and the eye is pale. The œdema and cloudiness of the retina now extend to the periphery. The white area, however, is not changed in color or extent. There is a singular shimmer in front of it. Apparently slight haze of the deeper parts of the vitreous. On account of bad taste in the mouth KI was dropped and the $HgCl_2$ continued separately. Pilocarpine 0.02, once a day, together with a steam bath.

9th day. Vision unchanged. Eye pale. Distinct but very fine deposits

on posterior surface of lower part of cornea, seen to-day for the first time. The retinal cloudiness and the swelling of the papilla are receding. The shimmer seen over the infiltrated area can now be traced to a very delicate transverse membrane in the vitreous close to the retina. It covers only the white plaque and can be recognized by reason of a very faint "dotting" on part of its surface.

24th day. The salicylate of sodium has been omitted since more than two weeks, as no benefit could be traced to it. Small doses of $HgCl_2$ and occasional pilocarpine sweats have been continued. Within the last week the sight has risen to fingers at four feet distance. The peripheral vision is getting clearer. The keratitis punctata is gone. The vitreous is clearer. The neuro-retinitis is subsiding, so that the edge of the disc can now be recognized. The chorio-retinal lesion is unaltered.

51st day. There has been steady improvement with but little medication since several weeks. She counts fingers at twelve feet slightly excentrically and somewhat uncertain at 10° along the visual axis. The papilla and retina show only traces of cloudiness. The chorio-retinal lesion is unchanged. The membrane in the vitreous in front of it can no longer be defined. To-day, however, there is seen for the first time a semi-lunar yellow streak in the fundus encircling but not touching the white area at its inner side.

54th day. The new (crescentic) chorio-retinal change is more pronounced. Advised the more frequent use of pilocarpine.

65th day. V. unchanged. Papilla and retina still clearer, though not quite normal. The chorio-retinal lesion unchanged. The adjoining crescent fainter. Stopped all active medication, except small doses of strychnia.

Mrs. M. was seen at intervals of months. There have been no changes except of retrogressive character. She counts fingers at ten feet distance and has normal peripheral vision. Twenty months after the occurrence no anomaly could be found in the fundus except a yellowish discoloration inward and downward from the macular region. This area had been surrounded by a faint pigmentary fringe half a year ago, but scarcely any dark border now exists. While the retinal vessels in general are normal, there is a noticeable scarcity of small arterial twigs between the papilla and macula. Neither now nor ever before has it been possible to recognize the fovea centralis.

II. Feb. 25th, 1891. Miss Dora S., 17 years. Perfect health. Since two weeks the left eye has been failing and the left pupil enlarging. Has had no pain except left sided occipital headache last week. The left upper second bicuspid tooth has been bad and for about a week she felt a tender chord running under the cheek from that tooth toward the orbit. She had the tooth pulled yesterday. R. E. normal.

The left eye counts fingers at one to two feet but has perfect visual field. There is slight dusky congestion of the sclera. T. is normal. The slightly enlarged pupil is mobile. The cornea is densely *dotted* on its posterior surface. The iris, grayish blue in the R. E., shows a greenish discoloration, but reacts fully to homatropine. Beyond the existence of membranous shreds in the vitreous, nothing could be learned by ophthalmoscopic examination. The dental history as well as the one-sided nasal stuffiness and suppuration suggested disease of the left maxillary sinus. On opening the latter through the alveolus of the extracted tooth, fresh, not fetid, pus was found. The antrum was washed out. No internal medication.

2d day. Felt clearer in the head and sight of L. E. is clearer (although fingers are not counted beyond 2 feet.) The sclera is pale. Ophthalmoscopic reflex brighter. Irrigation of antrum. Atropine in eye.

4th day. Can see outline of papilla ophthalmoscopically, which seems normal. Continued irrigation and atropine and ordered salicylate of sodium.

6th day. The left side of the nose is less stuffy and there is less discharge than before the operation. Fingers counted at 3 feet.

13th day. Fingers at 10 feet. The cornea has perhaps even more deposits on its posterior surface than at first, but on account of the clearing of the vitreous the ophthalmoscopic reflex is getting brighter. Still no details visible except shape of disc.

28th day. V. $\frac{20}{15}$. Cornea perhaps, vitreous certainly, much clearer. Inward from and just above the macular region can distinguish a white

irregular plaque about one-sixth papillary area with a shimmer over it. Below this are four minute whitish round retinal specks. The discharge from the antrum is steadily diminishing. Dropped the useless salicyl. sod. and ordered pilocarpine.

36th day. V. $\frac{15}{70}$. Cornea clearing rapidly. Vitreous shows still a few shreds especially about the chorio-retinal lesion, but no diffuse haze. Although pupil has been kept at maximum width, there is a ring of faint deposits on the lenticular capsule corresponding to the dilated pupillary rim. The ophthalmoscopic appearances are unchanged, except that there is more (?) stippling in the region between papilla and macula. The fovea centralis is not visible.

41st day. The antral discharge has ceased. The cornea is nearly normal and the vitreous shows less shreds. The four small specks in the centre of the retina are fainter. The upper white plaque looks more saturated in color and shows a few drop-like offshoots, which were not there before. The choroidal mottling and stippling is also more pronounced. There still seems to be active as well as retrogressive changes.

65th day. There has been steady subjective improvement. V. $\frac{15}{40}$. The chorio-retinal lesion is less saturated in color, but there is more of a glistening appearance, as if there were reflections of light from its surface. The satellites are fading. The irregularity of the pigment epithelium is getting to be more pronounced. There is still some pus occasionally in the antrum on irrigation.

74th day. V. has sunk to $\frac{15}{50}$. Ophthalmoscope shows a slight haze which can be traced to the existence of a very delicate transparent membrane in the anterior part of the vitreous. There is a trifle more pus in the antrum.

Under the regular use of insufflation of boracic acid the disease of the antrum ceased shortly after this time. The intra-ocular lesions became less and less pronounced, until after four months no opacity remained and the ophthalmoscope detected only the supra-macular plaque with marked stippling of the central part of the fundus.

Thirteen months from the beginning V. was $\frac{15}{40}$ and the use of the eye satisfactory. Cornea, vitreous, papilla and retinal vessels are normal. There is still much stippling in the macular region. The former white plaque is now more reddish yellow towards its centre, but still whitish and glistening towards its periphery which is surrounded by very faint pigmentation. In the place of the glistening white specks formerly in the retina below the horizontal meridian there are now three faintly indicated atrophic spots.

III. Sept. 1, 1891. Mr. B., 22 years old and in perfect health. Dimness of the R. E. since two weeks. No pain. L. E. normal.

R. E. normal externally. V. $\frac{15}{185}$. Pu. normal and easily dilated. Four minute elongated specks in or on the posterior surface of the cornea, scarcely enough lesion to call it keratitis punctata. Stringy shreds in vitreous. Papilla and retinal periphery normal. Between disc and macula, and just above the horizontal meridian an oval area of white sub-retinal or retinal infiltration, less than half the papilla in size. There is no cloudiness or infiltration around the retinal vessels at its irregular border. Below it are three minute specks of yellowish discoloration.

Treatment: Atropine, dark glasses, salicylate of sodium, pilocarpine.

3d day: V $\frac{15}{200}$. Specks on posterior surface of cornea are more distinct but not more numerous. Vitreous somewhat cloudy over the disc but no papillitis. The chorio-retinal lesion is perhaps more glistening than before.

5th day. Scarcely any specks on the cornea. Vitreous quite clear. Disc well defined. Vailing and cloudy swelling of a narrow zone of the retina surrounding the papilla, but not extending to the white area, which latter seems to reach to-day, further towards the fovea. The satellites below are more pronounced. Changed Sod. salicylat. for $HgCl_2$ and KI.

10th day. On account of suspicious soreness of the mouth, omitted the $HgCl_2$.

12th day. V $\frac{15}{165}$ Cornea normal, a haze in the vitreous over the infiltrated area. The use of a convex 8. D. with the ophthalmoscope shows this to be due to a delicate transparent membrane just in front of the retina. Resumed the mercury.

15th day. More turbidity of papilla and adjoining regions, especially downward below the chorio-retinal lesion.

29th day. The only change is clearing of the peripapillary zone of the retina. The disc appears quite natural. V. $\frac{15}{120}$.

33d day. Again more haze over and around the papilla. V. $\frac{15}{160}$. Dropped KI and $HgCl_2$; advised a more regular use of pilocarpine.

40th day. The haze over the papilla is clearing. The chorio-retinal infiltration unchanged.

The patient left the city but was treated for some weeks in another town. He was again seen six months after the onset of the disease. He had now V. $\frac{15}{120}$ with clear peripheral sight. The cornea still shows a couple of dots with transmitted light. There is a transparent string in front of the disc in the vitreous, otherwise the vitreous is normal. The only other ophthalmoscopic anomaly is a moderate pale yellowish discoloration of the former site of the infiltration. Below it there are three faintly defined small round atrophic spots and one minute white speck in the retina.

A FEW REMARKS ON THE TREATMENT OF PURULENT CONJUNCTIVITIS.

By A. A. Foucher, M. D.

EYE AND EAR SURGEON NOTRE DAME HOSPITAL, PROF. OF CLINICAL OPHTHALMOLOGY AND OTOLOGY AT LAVAL UNIVERSITY OF MONTREAL.

Most authors agree on the treatment of purulent ophthalmia by the use of cold, of nitrate of silver and antiseptic washing, to which may be added some other treatments varying with the complications which may arise. If, to insure success in practice, it sufficed to trace the outlines of a given method, we would have but little to say on the subject, and nothing new nor interesting to add to our present knowledge. But many practitioners differ as to the mode of applying and the result of these various treatments, so that it may prove interesting to seek the best method of applying them successfully against that serious disease.

Nitrate of silver was in use for a very long time in concentrated solutions of 10 to 30 grains to the ounce of distilled water; this solution was instilled into the eye without regard to its effects on the cornea. Later on the mitigated pencil was resorted to by localizing the cauterization on the palpebral conjunctiva. But both these modes of employing nitrate of silver were set aside by a great many physicians as soon as they discovered, as I have myself, that these applications, even if prudent, could hasten the setting in of corneal complications. Nitrate of silver has not, however, on that account, been done away with; but a more rational use of the same now prevails.

The solutions in use are graduated between 5 to 15 grains to the ounce according to the intensity of the disease, are applied exclusively to the palpebral conjunctiva and are seldom renewed more than twice a day. It would be a mistake to submit the eye to more frequent irritation whilst it would be blameful also to use nitrate of silver at the outset of the affection. My line of conduct is to wait till the lid can be easily everted without causing much pain to the patient.

Nitrate of silver 15 grains to the ounce, used at this stage helps considerably to diminish the purulence. It might alone very possibly cure purulent conjunctivitis, but it is wiser not to trust solely to it, and have recourse also to the other two treatments indicated.

Antiseptic washes for the eye are in universal use; but the liquid chosen is far from being the same with all practitioners, and it is immaterial whether it be a saturated solution of boracic acid, a solution of bi-chloride of mercury $\frac{1}{5000}$ of cyanide of mercury, $\frac{1}{1500}$ of permanganate of potash, or of peroxide of hydrogen. It is prety well evidenced that these different solutions thus graduated so as to avoid irritating the eye, do not destroy the gonococci; the most they can achieve is to paralyze their development. But supposing their microbicide action to be null, their astringent and cleansing properties remain, and these are not to be overlooked. In my practice I have, in a general way, made use of the saturated solution of boracic acid, and were I to change for another, I would willingly adopt the $\frac{1}{1500}$ solution of cyanide of mercury, with the addition of a small proportion of chloride of sodium as prescribed by *Chibret*. The washing of the eye should be practiced as often as the degree of purulence of the conjunctiva requires. In our ordinary cases, during full suppuration, it is not exaggeration to give hourly instillations and I am often more exacting still.

The treatment by cold applications deserves our most serious attention, and here again we should be fully settled as to the mode of using the same, otherwise the results obtained may prove quite different.

Cold is employed in compress form. We may also use the current of ice water through Leiter's tube. Finally, we may apply directly on the eyelids pellets of ice wrapped in a rubber bag. Most authors advise the application of iced compresses on the eyelids and their renewal as often as may be necessary to keep up a uniform cold temperature. The more the ambiant heat and that of the eye are elevated the more frequently should these applications be renewed to prove in anywise efficacious. During the hot summer season and where the conjunctivitis is intense, the iced compresses warm up almost immediately upon their being applied to the eye. Hence the necessity of renewing them every minute; and even then we can not expect to lower the temperature to any marked degree. The thermometer applied to the lid and under the compress struggles between two opposite influences, and if it favors the cold, the result is not a remarkable one, since the thermometer oscillates only a few degrees. Moreover the task imposed on the nurses to renew the applications frequently day and night constitutes an annoyance and an obstacle most difficult to overcome, unless we have at our disposal truly devoted and trustworthy persons. And even the latter are apt to be unmindful and may leave the compress lie over 5 or 10 minutes on the eye. So that, far from lower-

ing the temperature, these compresses favor its rise, and instead of diminishing the suppuration they actually increase it. The principle embodied in Leiter's tube obviates this disadvantage; it is fixed wherever placed and keeps up constant refrigeration during the lapse of time separating each washing of the eye. But this tube does not rest equally on every portion of the eyelid; it leaves some interspaces and is of a less practical application in domestic than in hospital service. You must have a large reservoir of iced water and recipients to store it; then the tubes are not always in good working condition; in short, I have abandoned their use and resorted to ice applied directly to the eyelids.

Notwithstanding its inconvenience, I am satisfied this latter method offers great advantages, foremost among which is that of maintaining on the eye a degree of refrigeration sufficient to rid the eye most promptly of its chemosis, of the œdematous swelling of the lid and eventually of the conjunctivitis itself. The thermometer placed between the lid and the ice bag, lowers rapidly and remains steady at the degree of cold necessary to cleanse the conjunctiva.

During the first period this, together with the antiseptic washing, constitutes the only treatment that can be followed: it is of much import, therefore, to shorten this first stage of tumefaction as much as feasible so as the sooner to utilize the virtues of the nitrate of silver. We do not hesitate to say that, applied in that manner, ice presents no danger, the adult patient finds immediate relief, and after the first twenty-four hours the chemosis and the œdematous swelling of the lids will have subsided notably.

It has occurred to me, after having obtained the subsiding of the chemosis by ice applied during 2 or 3 days, to see the swelling reappear anew and just as intense as the first day, under a weaker refrigerant action of the iced compresses.

Chemosis constitutes the greatest danger that can threaten the cornea; so long as it exists we can not foretell what will be the fate of the cornea; but the moment it disappears we have scarcely any complications to apprehend on that spot. The danger arises from the obstructed condition of the nutritive interchanges in the cornea, whence the endosmotic perturbations we all know of.

The chemosis also acts by constriction, and the interstices produced by it around the cornea favor the retention of plastic secretions which adhere to the cornea, erode the epithelium and lead to infection.

By what process does cold act so as to abate the chemosis? Likely through its constrictive, energetic and constant

action on the vessels, and also through its action on the lymphatic cells. The researches of Teichman and Waldeyer on the lymphatic vessels of the conjunctival and sclerotic cornea demonstrate that this membrane possesses very rich lymphatic networks, visible mostly at the sclero-corneal junction, where they form a remarkable circle.

Under the influence of purulent conjunctivitis these vessels are choked up and help to form the chemosis. On the other hand, Ranvier's experimentation on the lymph cells goes to show that cold under 20° C. has a powerful action on these cells; below that temperature the cells cease to expand, their shape remains unchanged and they do not rest on the sides of the vessels or cavities which contain them. Thus cold exercises a salutary action on lymphathic tumefactions, and this mode of action is, to my mind, a satisfactory explanation of its efficiency in removing the chemosis.

Ice is objected to in the treatment of young children, and parents themselves are loath to accept it. In the case of the newly born, chemosis is less marked than with adults, the danger is therefore less imminent, and for that reason I use the iced compress in a great number of these cases; but when I have to deal with a most serious case of purulent ophthalmia even in a newly born patient, and the case is accompanied with much swelling, I resort to ice at least for a few days without the least hesitation. This practice which I have followed for the last eight years has given me the best results. I do not scarify a fleshy chemosis; sometimes blood depletion at the temples is practiced with profit, but this is only an adjuvant, or a secondary resource. I have never deemed it advisable to relieve constriction by incising the eyelids, as suggested by Critchett, whereas the ice always brought about sufficient reaction to render this mutilation useless.

I may conclude by stating that corneal complications have been rare and of a trifling nature with subjects whose treatment I have been in a position to control since the inception of the disease; in these latter cases and also in those wherein corneal complications existed before I instituted the treatment, I continued to apply cold, and notwithstanding a prevailing opinion which to the contrary advises the suspension of that treatment in such cases, I have always had to congratulate myself on its use, and I am inclined to believe that an aggravation of these complications would result from treatment by warm compresses.

I also carefully avoid opening the cornea lest such a proceeding should favor the spread of the infection by widening and deeping channels which already existed.

RIPENING OF IMMATURE CATARACTS BY DIRECT TRITURATION.

By Boerne Bettman, M. D.

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In every department of medicine there is some theme which is especially attractive and calls for particular investigation.

Thus, the aurist has for years regarded trepanation of the mastoid as worthy of indefatigable labor. He formulates these cases with pleasure. He analyzes every advancement in the technique of this operation, every improvement relating to the after-treatment is hailed with delight. Opening the mastoid becomes his "chef d'œuvre."

The gynecologist finds a fruitful field of labor in ovariotomies, and to the oculist the most alluring subject is extraction of cataract.

Since the time of Daviel every innovation, which facilitated its removal and increased the possibilities of favorable results, has been throughly investigated.

With the introduction of Graefe's method of extraction the acme of perfection was believed to have been reached.

Soon, however, the ceaseless spirit of progress induced new observers to further efforts in eradicating what experience taught to be defects.

Thus we find springing up in rapid succession the innovations of Weber, Pagenstecher, Liebreich, De Wecker, Knapp, Panas, Galezowski and others.

All had but one object in view, all strove to perfect and simplify in some way or other, cataract operations.

So well have they succeeded and to such a state of perfection has its technique been brought, that to-day, it may be regarded as the most uniformly successful operation performed on any organ of the body.

Of late years the energies have been partly directed in a different channel.

Some observers not content to await the natural and tedious ripening of cataract have introduced methods for premature removal, as McKeown, Wickeriewigz and their followers.

These claim that unripe lenses can be readily extracted by flushing the anterior chamber with a non-irritant solution, thus getting rid of the transparent cortical substance which does not escape with the nucleus.

Others again have preferred what they deemed the safer plan of hastening their maturity. Prof. Förster deserves great credit for having introduced a procedure by which cataracts can be made mature in a very short time, in the course of weeks and even days.

Although I have but lately written at length upon his method and on a new one, introduced by me, I must at the risk of repetition give a short sketch of Förster's and the reasons which prompted me to adopt my own.

Förster was actuated by the same thought that others had already expressed, namely, to lessen the length of enforced blindness accompanying the natural method of ripening.

He succeeded admirably, in this direction, by subjecting the unripe lens to a method of massage which he terms trituration.

After the evacuation of the aqueous humor preceded by an iridectomy he rubs the cornea with a blunt instrument. The force is transmitted to the lens, its fibres are fractured and forced asunder and an immature cataract is converted into a ripe one in a variable period of time.

Many oculists have followed his instructions but have found that complications directly attributable to them have ensued.

Thus iritis and opacities of the cornea have frequently been noticed as the result of the mechanical irritation of the rubbing and pressure.

To obviate these defects I have, for the past six years, practiced my method of direct trituration which has great advantages over the indirect method.

In order to avoid an unnecessary rubbing of the cornea and squeezing of the iris and to prevent an unwarrantable mutilation of the latter (iridectomy) I insert into the anterior chamber, after having made an incision into the corneo-scleral margin my trowel-shaped spatula.

The flattened end of the instrument is placed on the lens surface within the pupillary space.

If the pupillary field is small it is slid underneath the iris below and on either side and the lens subjected to trituration.

If the cataract is of the soft variety the cortex may be seen to break down while being manipulated. Ordinarily several days ensue before any striking changes appear.

The construction of my instrument, namely, its trowel shape, prevents contact with the iris, the shank being in a higher plane than the colored membrane. In my former

papers I reported seventeen uniformly successful cases matured according to my method. The same results have attended my later operations, the clinical histories of which are as follows:—

Case 1. Anton R. æt. 76, readmitted Jan. 14, '92. R. E. Aphakia operated a half year previously. V. $\frac{20}{40}$ with + 10. D.

L. E. Senile immature cataract. Broad striæ in interior cortex, otherwise, transparent almost in its entirety. Iris shadow broad. Very dim reflex from fundus below.

Vision — Fingers easily counted at ten feet.

Jan. 20th, '92. I matured the lense without making an iridectomy. The eye was cleansed with boric acid solution, a drop of atropine instilled and then bandaged.

Not the slightest reaction followed, not more than would naturally be produced by grasping an eye with a fixation forceps.

Two days later, the bandage was permanently removed, and the eye protected by dark glasses. The patient was permitted to walk about the house.

At the expiration of a week a great change was visible in the cortex. Sectors of opacity, satin-like in appearance, had spread over its entire surface. Vision was reduced to counting fingers at two feet, and a few days later only the direction of the moving hand was discernible. Erysipelas having become endemic, I was obliged to defer the subsequent removal of the lens until March 1st, when I did a simple extraction. The lens escaped almost in bulk, an extremely small quantity of opaque cortical remnant was readily expelled, leaving a clear black pupil.

No reaction followed, the bandage was removed at the end of four days. The patient left the institution for his home March 9th without my permission. I informed the superintendent, who addressed a letter to him, which brought the reply that his eye was in good condition.

I am unable to record his exact vision; before leaving he was able to count my fingers across the room, a distance of fifteen feet. He also stated that by reversing his glass he could see through his spectacle as well as with the other eye.

Case II. John T. æt. 74, admitted April 27, '92. Cataract immature O. D. Perception of light and projection good. V—counts fingers at eight feet. Iris shadow. Anterior cortex transparent.

On April 28 I triturated the lens without the slightest reaction. The anterior cortex rapidly became opaque. May 21st, the patient was unable to count fingers at one foot. Simple extraction was performed on this day. The incision was made entirely in the transparent cornea, followed by Knapp's periphoric capsulotomy. Delivery of the lens and opaque cortical substance was easily accomplished. A drop of eserine was instilled and the eye bandaged. It was left in position four days.

On removal the eye appeared pale, the wound was thoroughly closed, the pupil black and regular. The patient was discharged June 9th with V=$\frac{20}{40}$ with 10. D.

Case III. Timothy Carroll, æt. 64, admitted Sept. 2, '92. Left eye had been unsuccessfully operated on a year previously by another oculist.

The pupil was closed and drawn upwards and irridectomy had been drove downward and inwards, which had given the patient about $\frac{20}{200}$ vision. The right eye showed an immature senile cataract. Broad iris shadow. Transparent cortex in its entirety. Vision—To fingers at from five to six feet. Projection and perception good.

I triturated the lens Sept. 8. No reaction followed, the bandage was permanently removed on the second day.

A week later a great change was noticeable in the appearance of the lens.

With a magnifying glass the cortex was seen to be composed of fine satin-like striæ forming five or six sections, which conveyed toward the anterior pole. A few days later and the striæ were much broader and whiter, indicating a more thorough degeneration of lens fibers. Vision was reduced to quantitative perception of light.

The incision was made throughout in the transparent cornea through the upper half of its extent. The cystotome was then introduced and a T shaped incision made which was immediately followed by discharge of opaque broken down cortical substance. This was readily expelled by a few strokes of the spoon on the cornea. The body of the lens then followed, leaving the pupillary field covered with opaque lens capsule. The opacity of the capsule was produced, no doubt, by the pressure of the spatula and was probably due, as I have previously stated, to a proliferation of the epithelium lining the posterior surface of the anterior capsule.

The wound cohered nicely, the iris contracted. After cleansing the eye and adjacent parts with a bichloride solution, the eye was bandaged and the patient put to bed.

A slight iritis was noticeable on the third day. This however readily yielded to atropine and hot applications. The patient was discharged three weeks later with a round pupil. In the lower inner part a piece of opaque capsule protruded. His vision was $\frac{20}{60}$, which will be improved by a secondary operation.

CONCLUSIONS.

In none of these cases was trituration followed by any untoward symptoms, neither after the first operation or subsequent to the removal of the cataract. In all, trituration was accomplished without doing an iridectomy. The withdrawal of the keratome if not quickly executed is followed by an outflow of a large quantity of aqueous resulting in contraction of the pupil. As the tip of the trowel-shaped spatula is small no inconvenience results therefrom. It rests in the reduced pupillary area and can be easily slid behind the iris and the covered part of the lens triturated.

The cortex rapidly underwent degeneration and vision proportionately decreased. So rapidly did the cataracts mature that extraction and restoration of useful vision was soon after accomplished.

In none of these cases did I experience any difficulty in removing opaque cortical substance. It was expelled in mass, owing, no doubt, to the greater cohesiveness of triturated cataracts, than those matured through the natural method, where the cortex has undergone a more complete degeneration.

In all cases was the vision quite good on admission to the "Infirmary." One counted fingers at ten feet, the other at eight, the third at six feet. They did not belong to the umber-colored variety, where the lens never becomes entirely opaque and where entire loss of vision rarely ensues; but rather to the softer forms of nuclear cataract, having the broad striæ in the cortex, indicative of the softer variety.

Cases one and two were not sufficiently advanced to tempt even those operators who favor the extraction of unripe cataracts. Judging from the time required for the right lens of case I. to mature, and also from the appearance of the left eye, from eight to twelve months more would have been necessary for its complete ripening.

Time forms an important factor to those afflicted with cataracts; any means which will help to alleviate enforced blindness, idleness and helplessness, must be regarded as an important advance.

Case XI.[1] Reported, before illustrates vividly the importance of direct trituration as a time saving expedient. I reproduce it here for that reason:

Mr. A., æt. fifty-one, kindly sent to me by Dr. MacArthur. R. E., incipient cataract; able to follow his vocation as salesman of paints. L. E., non-mature cataract. Duration, one year. Counts fingers promptly at eight feet. Dim reflex from fundus through lower part of lens. Iris shadow. Broad glistening band of opaque striæ in cortex. December 28th, 1891, direct trituation without iridectomy. Absolutely no reaction. Discharged three days later. V=fingers with difficulty at two feet. Made a trip to St. Paul in pursuance of his calling, but was obliged to return home after a few days owing to his poor vision.

January 25th, 1892, V=0. Extraction of lens followed by rapid uncomplicated healing V=$\frac{20}{40}$ with + 11. D.

The secondary operation of slitting the capsule was made after four months, resulting in V=$\frac{6}{9}$ with + 11. D. He reads the finest of print of Sneller's test types with + 15. D. The gentleman had a wife and two daughters, one a confirmed invalid, who looked to him for support. Unable to read price lists and forward orders, he would have lost his only means of maintenance.

To have awaited maturity of the lens by the natural method would have meant enforced idleness, and dependence on the charity of others for at least a year. At date of writing, more than sixteen months since Mr. A. came under my observation, the right cataract has still not matured.

In the twenty cases I have thus far reported an escape of vitreous occurred in but two during the extraction of the lens. This mishap was due to causes unconnected with direct massage—as I have indicated in my previous publication.

Such constant immunity from complications is the strongest and most convincing answer to the criticism that my procedure endangers rupture of the suspensory ligament.

SUITE 1008 AND 1012, VENETIAN BUILDING.

[1] A new operation for the speedy ripening of immature cataracts. By Boerne Bittman, M. D.—*Chicago Medical Recorder, April, 1892.*

SOME OCULAR PERCEPTIONS, AND HOW THEY ARE INFLUENCED BY LENSES.

By R. J. Phillips, M. D.,

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Under various titles the subject treated in this paper has received the attention of several writers in periodical literature, and has been treated in a fragmentary and incidental way in the systematic works of Donders, Nagel and Landolt. The last author devotes several pages in his recent fine work on refraction to what he calls the secondary or accessory effects of spectacles; by which term he refers to those effects which they have in addition to those for which they are prescribed. His remarks on this subject are confined to spherical lenses. In a paper "On Certain Stereoscopical Illusions Evoked by Prismatic and Cylindrical Spectacle Glasses," Dr. John Green has communicated to the American Ophthalmological Society (1889) the results of a very valuable and original study of some of the phenomena induced by these lenses. Dr. J. A. Lippincott has published the result of his investigation of the same phenomena in an article entitled "Binocular Metamorphopsia." (Archives of Ophthal. April, 1889.) The variety of these titles, the fact that many appearances worthy of study have, so far as I am aware, escaped mention, as well as the differences of opinion expressed by the writers referred to as to the proper explanation of the phenomena in question, has led me to think that a systematic consideration of all, or at least the principal of them, would be useful. It seems evident that this treatment of the subject should begin with a consideration of the perceptions which are secondarily influenced by spectacle lenses, or which underlie the illusions which the latter evoke. It is a self-evident proposition that every glass which we place before the eyes, be it prescribed for the relief of the ciliary muscle, the acquisition of clearer retinal images, or what not, will at the same time change the conditions under which we have been accustomed to view the objects about us, and hence, interfere more or less with the ideation of those objects upon which we have been wont to rely. This statement, though doubtless trite enough, does not seem to me to have received from

refractionists the attention it deserves; doubtless because the matter is rather outside the realm of pure optics in that of psychology. It is less a matter of vision than it is of *ocular perception*. Between these two terms it will be well at the outset to draw the distinction.

The only original and peculiar perceptions of the sense of sight are those of light and color. They are the only sensations of which the blind can form no conception. Variations in the intensity of these stimuli, and in the extent of the retinal area affected by them, are all that a visual apparatus consisting of a single eye incapable of movement could learn of itself. The acquired perceptions connected with the eye are those of motion, form, distance, size, solidity and relative position. These perceptions result from a combination of optical effect with the sensation of innervation of the ocular muscles. The former are *visual* perceptions; the latter are *ocular*, but not exclusively visual.

We originally learn to perceive motion by the fact that the retinal image occupies successively different places on the retina, or that in order to keep the image in one place the external muscles must perform certain orderly contractions. This is possibly the earliest of the secondary perceptions to be acquired, as among the first signs of intelligence in the infant are the following of a light with the eyes, and the discovery of motion is probably the simplest of the ocular perceptions. The nearer the direction of motion approaches to the visual axis the less is our appreciation of it, as we have then less muscular contraction to suggest it. To one standing on a railway track, looking after a departing train, the sensation experienced is not that of motion but of rapid shrinkage in size. This effect is heightened if the view of surrounding objects is cut off by looking through a tube or the clenched hands. In daily life we derive assistance in estimating the rapidity of motion from the exertion which we see being expended to produce it, and from the rapidity of the change of position of the moving object relative to that of other objects in the field.

The next perception in point of complexity is that of extended surface. This is also learned from the sense of action in the ocular muscles necessary to carry the eyes over all portions of the field of view. Repeated similar impressions in the moving eye due to the extension of surface must be distinguished from those produced by a moving object by the fact that when the eye stops the image does not change its place upon the retina, and that, furthermore, the observer can at will examine all the objects of still life in his field of view, both in a direct and inverted order, and find their sequence undisturbed. The perception of space in two dimensions follows from the experi-

ence of change in the direction of eye movement, and that of outline of large objects by the variation of movement, produced by angles, or by curves.

The perception of size in external objects is based primarily upon the size of the retinal image, or, in the case of large surfaces, upon the extent of the eye movements necessary to bring the opposing boundaries of the object successively into view. This perception is intimately bound up with that of distance, as a larger object farther away, or a smaller object close at hand subtending the same visual angle, produce retinal images of the same size. Hence, our estimation of size is always made with consideration of the distance at which we know or suppose the object to be situated.

The perception of solidity, which is the discernment of space in three dimensions, is due to the dissimilarity of the two retinal images in the two eyes. The development of the ocular perceptions teaches us that identical impressions in the two eyes are compatible only with great distance or with mere surface; that is, with space in the two dimensions at right angles to the line of sight. From the presentation of unlike images we are able to deduce the mental construction of an object having a third dimension coinciding with that line. The cognizance of a third dimension is equivalent to the perception of a nearer and farther boundary of an object, and to that of nearer and farther distance of different objects from each other and from the observer. Thus, we have the primary factor in the estimation of distance: the more unlike the images, the less the distance. The other factors are the amount of accommodative effort necessary to focus the object clearly, and the degree of convergence of the visual axes required to enable them to meet at its surface. The sensations of accommodation and convergence confirm the idea of solidity in external objects, or of depth in the scene, as they differ in amount for the foreground and the back.

But these data are available for comparatively short distances only; at greater distances they are all wanting. The retinal images are no longer dissimilar, and neither convergence nor accommodation are required. Perhaps the simplest way to discover what are the data upon which we rely for the estimation of distance under these conditions is to study its representation in paintings. Since it is impossible for the artist to present dissimilar, or stereoscopic, images to the two eyes of the observer, it is doubly incumbent upon him to use all side devices which his art can teach him to produce the illusion of solidity in the pictured objects, or of depth in the scene. The principal of the means at his command are the skillful handling of light and shade, and perspective. Linear

perspective, with which every one is familiar, is caused by the apparent gradual degradation in the size of objects as their distance increases. As we look down a long street, the lines formed by the tops of the houses, the sides of the street, and the gutters, all seem to converge towards the distant centre of the view, and all objects, in conformity with these lines, grow smaller and smaller until they are no longer to be distinguished in the distance. But not only do objects appear smaller as they are farther away, but also less distinct in outline and color. Let us suppose a car moving down our long street. Close at hand it is composed of sharp lines and bright colors. As it moves farther away, not only does it apparently decrease in size from the effect of linear perspective, but its sharp outline gives place to rough form, and its bright colors are dulled. In the distance it has become a little blur of dull color. This appearance, from being caused by the lack of perfect transparency in the atmosphere, is called aerial perspective, and probably plays quite as important a part in our estimation of distances as the other. Its influence is shown in the difficulty which we have in judging distance in an unfamiliar atmosphere; as at sea, where, owing to the unwonted clearness of the air, all objects appear to the landsman much nearer than they really are.

Since all the principal factors concerned in the perception of size, form and distance are altered in a greater or lesser degree by the different kinds of spectacle lenses, it would seem that the application of the latter would result in a serious upsetting of the judgment on these points. That such is not the case is due to the inexact nature of the functions, and to the fact that the great mass of mankind are very poor observers of their surroundings. With persons of specially trained judgment in these matters, such as artists and draughtsmen, and in less degree, carpenters, tailors, painters, cutters of various materials, and other artisans who use their eyes for plumbing objects, fitting angles, etc., the difficulties introduced often seem a high price to pay for the relief of accommodative asthenopia, or even for the procurement of clearer retinal images. Familiar examples abound which show how loose and subject to error is the judgment upon the points of which we are speaking of the ordinary untrained observer, and how readily he is deceived in regard to them.

We know an object to be of a certain contour when in a certain position; our memory registers this shape as belonging to that object, and we are apt to think that we always see them together. In fact, there are infinite changes of position, each one of which will change the contour presented to our eyes. For purposes of memory, we seize upon the

most characteristic shape of an object, not upon its most frequent one. The school-boy drawing of the human hand, with the fingers all outspread, is not a picture of what he has most frequently seen, but is his mental conception of a hand, based on its most characteristic appearance. So, also, he always draws the nose in the profile, the eye, however, in full face. He will even combine the two, putting a full face eye in a side view of the face, or a profile nose in a front view of the face. And this because he has only one conception of shape for each object.

In our estimation of size and distance we are extremely liable to fall into error. In a distance view of an unfamiliar object we can form but a poor idea of its size, except as we have the opportunity of comparing it with some other object with whose size we are acquainted. For objects near at hand, our conception of their dimensions is greatly influenced by their form and color. This is well shown by the old catch of requesting a person to mark on the wall the height of an ordinary silk hat. The estimate given is usually about twice what it should be.

It is evident that in the use of the eyes among familiar objects, they seldom take note of the details of the picture before us. They simply dwell upon each object long enough for us to recognize that which we have at some previous time examined more minutely. The object recognized, we go to our memory and experience for its characteristics, not to the picture before us. Artists must learn to disregard these memorized impressions, in order to see truly the appearance from a given point of the object they wish to represent, and they do not find the task an easy one.

With this brief statement of what we conceive to be the mode of formation of our judgment in regard to the ocular perceptions, we will proceed to consider the effect produced upon this judgment by placing before the eyes the various forms of spectacle lenses.

THE OCULAR PERCEPTIONS AS INFLUENCED BY SPHERICAL LENSES.

We apply convex lenses as a relief to overburdened, or as a substitute for absent, accommodation. These purposes attained, what effect have we produced upon the apparent size, form and distance of surrounding objects? For purposes of study we may make use of Landolt's comparison of the corrected hyperope with the emmetrope using an opera glass. The concave eyepiece of the latter, if considered as a part of the eye, makes the observer hyperopic, and this hyperopia is corrected by the convex object glass, which

must be weaker than the concave, because placed so far from the eye. All the characteristics of vision through an opera glass are present in the vision of the corrected hyperope, only less in degree in proportion as his convex glass is weaker and placed nearer his eye. It is not, of course, maintained that all corrected hyperopes will be certain to notice these changes in the appearance of surrounding objects. With weak glasses they are far too slight for appreciation. Where they are so great as to attract notice, however, as with strong convex lenses, or with any convex lens placed far from the cornea, they will be found to result from the same causes and to be explainable in the same manner as their immensely exaggerated counterparts in opera glass vision.

Every one knows that on looking through an opera glass the size of objects appears increased, while they are apparently brought nearer the observer. Many persons suppose this to be the sum total of the action of the glass, but a little consideration will show that these two illusions cannot be present without being accompanied by several others. Since the enlargement of the retinal image, by which the apparent size of the object is increased, is due to the enlargement of the visual angle by the glass, it is evident that it can affect only two of dimensions of space; those which lie at right angles to the visual axis. (No enlargement of the visual angle could affect the third dimension coinciding with that axis.) To say, therefore, that a convex glass, or an opera glass, makes objects appear increased in size, is true only of surface, since two dimensions only can be affected by such increase. Not only is the third dimension, coinciding with the visual axis, not increased, but we have just admitted that it appears diminished, since we said that the object was brought nearer, and we have previously seen that the perception of distance of the object from the observer, like the discernment of a nearer and farther boundary of the object, is simply the perception of the third dimension of space. Therefore, in vision through an opera glass, and in less degree in the vision of the corrected hyperope, the two dimensions of space which extend laterally to or cross the line of sight appear increased, while the third, which coincides with that line, appears diminished. It follows, that to the corrected hyperope, a solid object, or a surface lying nearly in the line of sight, will appear distorted in shape. A cube, for instance, will appear longer and higher than it is deep; a square field will appear as an oblong parallelogram, the shorter diameter corresponding to the line of sight. A circular flower bed will appear an ellipse. Moreover, of the distances between objects, some will appear

increased while others are diminished. Objects situated on either side of the observer appear farther apart, while those in line directly in front of him appear nearer to each other. Looking at a file of soldiers from one of its ends, the men appear closer together, and the line shorter than it should. Looked at from the front, the line is longer and the men farther apart. This being the case, fewer men can be seen through the convex glass, provided the line is long enough to extend entirely across the field of view, than could be seen through a glass of the same size having plane surfaces. But no more men can be seen beyond the edge of the glass; therefore a certain number are not seen at all. Some man in the line will be the last to be seen by looking through the glass near its edge. Since the line, as seen through the glass, appears lengthened, this man's apparent position is farther to the side than his real one. If farther to the side, it must overlap upon the position of the soldier next to him. This latter soldier will consequently not be seen at all, though his comrades next him on either hand are visible; one through the glass and the other beyond its edge. What is true of the edge of the lens at one point is true of it at every other, and the glass appears, therefore, to be surrounded by an annular hiatus, or gap, in the field of vision. This is readily seen by looking at a row of letters or figures through the edge of a convex lens held some distance in front of the cornea. One or more of the letters are found to be invisible unless the position of the lens is shifted. A ready illustration of what has taken place consists in cutting from a sheet of paper a disk to represent the portion of the field of view acted upon by the lens. If this disk be enlarged in all its diameters it cannot be replaced in the opening from which it was taken, but will overlap upon and obliterate a ring of paper surrounding the opening.

The increase of one set of distances and the diminution of another set interferes with the estimation of the rapidity of motion. An object moving across the field of view, through one of the magnified diameters, will appear to move faster than it really does, while if moving through the diminished diameter its speed will appear retarded. We have already alluded to the fact that we judge of the rapidity of motion somewhat by the exertion which we see being expended to produce it. If, therefore, an object, as a trotting horse, is traveling in a direction approximating to the line of sight, the corrected hyperope will have presented to him the curious spectacle of a horse exerting himself out of proportion to the progress he is apparently making.

Still other distortions in familiar objects suggest them-

selves. Angles will appear more or less acute, according as the line of sight crosses the legs or divides the angle. A right angle will only appear as such when one leg coincides with the visual axis. The relief of objects will appear diminished; letters in high relief will appear in low relief; depressions in surfaces will appear less deep; a sphere will appear more or less like a disk. In the same way that the different parts of a single object lack relief and are reduced to the same level, so the different objects in the field of view are seen in lessened relief. In other words, the perspective is diminished, and as we have seen that this is our principal dependence in judging the depth of the scene before us, that scene appears like an ill-painted picture, which the artist has not had skill enough to make appear at any point to be much farther away than the canvas.

The disturbance of the perceptions in the correction of myopia is of somewhat greater practical importance than in the case of hyperopia, as strong glasses are more frequently required, and reduction in the size of retinal images is felt to be a disadvantage; which is not the case with their enlargement. The corrected myope has his visual angle diminished by his glass, the diminishing effect being greater in proportion as the glass is stronger, and is placed farther from the eye. Here again we may make use of the comparison, suggested by Landolt, between the corrected myope and the emmetrope looking through an opera glass. But in this instance the instrument must be reversed. The convex object glass being placed next the eye renders it strongly myopic, and this myopia is corrected by the concave glass of the instrument, which must be stronger than the convex, because placed so far from the eye.

As the enlargement of the visual angle by convex glasses is able to affect only two of the dimensions of space; namely, those at right angles to the line of vision, so the diminution of this angle by concave glasses affects only the same two. These two are, of course, apparently diminished. The third dimension, corresponding to the line of vision, is increased, because the object appears farther away from the observer than before. The appearances presented to the myope are, therefore, directly the contrary of those experienced by the hyperope. Vertical surfaces crossing the line of sight appear diminished in size and thrown back in distance. A horizontal surface, as a square, appears to be a parallelogram, elonggated in the direction of the visual axis. A solid body constructed of these surfaces appears distorted; less high and broad than it should, but increased in depth. A cube, as in the case of the hyperope, becomes a parallelopipedon, its

longer diameter in this instance coinciding with the visual axis instead of crossing it. The relief of objects is increased; those in low relief appear in high relief; depressions in surfaces appear deeper. The features of the human face appear more prominent. Objects situated to the right and left of the observer appear nearer together, while those not previously visible are drawn in, as it were, and appear in the field. He is enabled to see each object doubled by looking through the glass near its edge; one image formed by rays coming through the glass, and the other by those which are uninterrupted. Objects situated nearly in the line of vision appear farther apart. An animal moving across the line of sight does not progress with speed commensurate with the rapidity of movement of its limbs; if, however, it change its direction to that corresponding with the line of sight, it suddenly shoots forward with great rapidity. The linear perspective is greatly increased, the aerial perspective diminished, so that the scene appears to have vast depth, notwithstanding that the component objects are more clearly seen.

THE INFLUENCE OF PRISMS ON THE OCULAR PERCEPTIONS.

As might be anticipated, the ocular perceptions are readily and variously disturbed by prismatic and cylindrical lenses. Beginning with prisms we may mention some of the illusions to which they give rise.

(1) *Weak prisms, bases out*, make objects appear nearer and smaller.

(2) *Weak prisms, bases in*, make objects appear more distant and larger.

These appearances are due to the effect of the glasses on convergence. In the first example, let us suppose the object to be an inch in diameter, and placed one foot from the eyes. Owing to the prisms, to bring the images to corresponding places on the retinæ we find necessary an effort of convergence equal to that to which we have been accustomed when viewing an object situated at some distance less than a foot; say six inches. Then, to the judgment based on this effort, and trusting to its experience, the object appears only six inches away. But an object one inch in diameter, and placed six inches from the eyes should give larger retinal images than those now upon our retinæ. So our judgment, instead of perceiving its first mistake, makes a second in supposing the object to be less than an inch in diameter. The explanation of the illusions evoked by prisms, base in, is simply the converse of that just given. A less innervation of the muscles of convergence being required in this case, the distance of the object from the eyes appears greater, and since the size of

the visual angle filled by the object has not changed, our judgment can only reconcile this angle with the apparent distance of the object by supposing the latter larger than it is.

(3) *Prism, base out, over one eye, the other eye open; or prism, base out, over each eye:* — A vertical surface, as a door or wall, appears to be concave from above downward; bowing on a level with the eyes, directly away from the observer.

(4) *Prism, base in, over one eye, the other eye open; or prism, base in, over each eye:* — A vertical surface appears convex from above downwards.

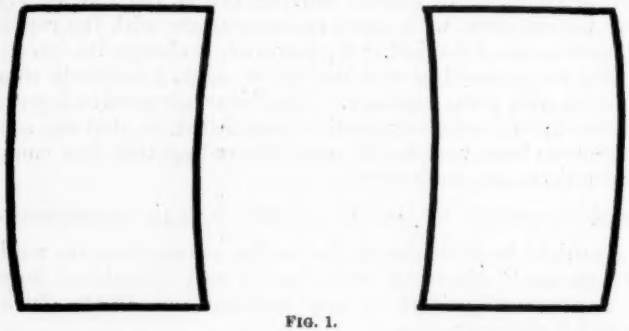

FIG. 1.

The explanation of these phenomena depends upon the fact that unlike images are produced upon the retinæ of the two eyes. This can readily be shown to be the case by viewing a vertical parallelogram with each eye separately. With prism, base out, for instance, the appearance presented to the right eye is that shown at the right side of Fig. 1. Fig. 1. Base in,

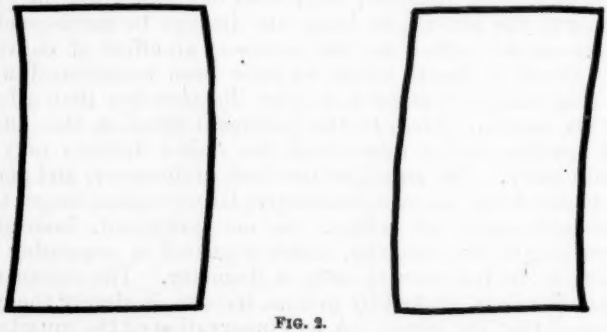

FIG. 2.

over the same eye, the other eye remaining closed, produces the appearance shown at the right side of Fig. 2. Fig. 2. Similar

maneuvers before the left eye will give the appearances presented at the left of the figures. These distortions are a matter of pure optics, and in no way depend on our perceptions; they take place in the camera obscura, when a prism is held before its opening, as readily as they do in our eyes. We have seen that the presentation of dissimilar images to the two eyes is irreconcilable by our judgment with the idea of a flat surface. When these images are combined, as they are when they fall upon corresponding parts of the retinæ, the conception is always that of varying distance from the observer. Hence, when we view Fig. 1 or Fig. 2 in the stereoscope we see a single object which appears to be concave from above downwards in the first case, and convex in the other. To a slight degree similar distortions take place in the horizontal lines of a figure, so that in addition to the curve from above downward, there appears a lesser curve from side to side, too slight to be shown in the figures without confusion. With strong prisms, however, this is sufficient to give to vertical flat surfaces an aspect more or less spherically concave or convex as the case may be.

Prism, base up or down, in monocular vision, of course gives rise to a distortion in horizontal lines similar to that of base in or out for vertical lines, but the amount of prism which can be overcome by the superior or inferior recti muscles is so slight that in binocular vision only very slightly dissimilar images can be presented for combination.

DISTURBANCE OF THE PERCEPTIONS BY CYLINDERS.

(*5*) *Convex Cyl., Ax. vertical, over one eye, the other closed, or over both eyes:*— Horizontal lines appear longer, and the horizontal dimension of a vertical, square card increased.

(*6*) *Convex Cyl., Ax. horizontal, over one eye, the other closed, or over both eyes:*— Vertical lines appear longer, and the vertical dimension of a vertical, square card increased.

The retinal images in these cases really have the form which we assign to them, due to the combination in a single eye of two images formed by two prisms; for the cylindrical glass may be regarded as acting as two prisms with their bases in apposition. For instance, when viewing a square, vertical surface with the right eye armed with a cylinder ax. vertical, the other eye closed, we have in effect before the eye two prisms with their bases united on a vertical line. These prisms would each produce an image of the square surface in view. The image formed by rays coming through the prism whose base is out would fall upon a more temporal portion of the retina, while that formed by the prism, base in, would be deflected toward the nasal side. These images partially over-

lap upon the retina, producing a single stimulated area whose outer and inner borders are farther apart than its upper and lower ones, and which is hence no longer square. These effects can be readily seen by employing instead of the cylinder the obtuse angled prism of Maddox, which is composed of two weak prisms with their bases in apposition, ground upon a single piece of glass. By rotating this glass about the visual axis the two images formed by it may be slightly separated vertically, and hence the effect of their composition readily seen.

(7) *Concave Cyl., Ax. vertical, over one eye, the other closed, or over both eyes:*—Horizontal lines appear shorter, and the horizontal dimension of a vertical surface decreased.

(8) *Concave Cyl., Ax. horizontal, over one eye, the other closed, or over both eyes:*—Vertical lines appear shorter, and the vertical dimension of a vertical surface decreased.

These appearances are simply the converse of those produced by convex cylinders, and their origin is made apparent by regarding the concave cylinder as made up of two prisms with their edges in apposition.

(9) *Convex Cyl., Ax. vertical, or Concave Cyl., Ax. horizontal, over one eye, the other open:* — A vertical square card appears a trapezoid rotated about a vertical axis; that side corresponding with the naked eye appearing shorter and nearer than the other. If the card be placed horizontal, so that its surface nearly coincides with the line of sight, it appears a complex figure nearly like a trepezium, its identity with that figure being destroyed by the fact that the lines marking its lateral boundaries are parallel. A cube so held as to present a vertical and a horizontal surface to view will appear an irregular object somewhat rhombohedral in shape, though, as we have just seen, neither of its visible surfaces is a rhombus.

(10.) *Convex Cyl., Ax. horizontal, or Concave Cyl., Ax. vertical, over one eye, the other open:*—The illusions are identical with those just detailed, but in this case the apparent decrease in size and distance is on the side corresponding with the eye which is armed with the cylinder, instead of on the side of the naked one.

The origin of the illusions stated in the 9th and 10th propositions, was first shown by Dr. John Green and has already been pointed out when speaking of prisms. (Props. 3 and 4.) Let us take the case of a convex cylinder, axis vertical, over one eye, the other being open. On viewing a vertical square card, we will have to deal with retinal images of the same height but of unequal width. (Prop. 5.) It might be anticipated that the less image would be swallowed up, as it were, in the greater, and that no illusion would result, but our judg-

ment seems unable to forget its early lesson that dissimilar retinal images mean the existence of a third dimension in the object. Hence, we have the apparent rotation of the card, bringing the side opposite the naked eye nearer the face. Since, however, the two sides of the card produce retinal images of equal height, though one is apparently farther away than the other, the judgment has no alternative but to consider that the height of the farther side is greater than the other. (Compare Props. 1 and 2.) As this illustration applies to all the remaining illusions, it is unnecessary to dwell farther upon them. An almost endless variety of distortions of geometrical figures is producible by using glasses which cause slightly dissimilar images in the two eyes, and the mode of formation of each one may be found by drawing upon a card the projected form of each retinal image and then placing the card in the stereoscope.

In conclusion, it may be pointed out that much of the ill-described difficulty which patients experience during the first few days of their wearing glasses, and which was formerly ascribed to spasm or to weakness of the accommodation, is in reality due to the disturbance of the ocular perceptions. Fortunately for the refractionist this disturbance is not seriously felt by the inaccurate observers who make up the greater number of his patients. It is to inaccurate observation rather than to evanescence of the illusions themselves that we are to attribute the fact that so little disturbance is caused by such palpable changes in the conditions under which the ocular perceptions take place. As has been pointed out, with persons of specially trained perceptions the illusions are quite persistent enough. In every case the patient should be warned of their occurrence, as otherwise, if they are noticed, they are apt to be regarded as something unprecedented, and an evidence of lack of skill in the refractionist.

Lastly, in mounting lenses it should not be forgotten that these disturbances are greater in proportion as the lenses are stronger and are placed farther from the eyes.

18 North 38th Street.

HÆMATOMA AURIS.

DR. S. C. AYRES.

CINCINNATI.

J. L., æt. 28, gave the following history of his case: He belongs to a burlesque company, and says that a few weeks ago his right ear was struck by a swinging trapeze. The blow received was sharp and severe, but he did not mind it much at the time. Later on the ear began to swell, and recently it has been quite painful. In addition to the blow by the trapeze he is daily subjected to a contusion of the ear in the following way: In his part of the play he stands still while another member of the company stands on his shoulders. At a given signal his friend slides down over his head, and in this way his ears are bent over and sometimes severely contused. From his description it seems quite probable that the hæmatoma is due to trauma. He is mentally sound and is in excellent health.

The anterior surface of the auricle presents a smooth rounded surface of dark purplish color. The skin is separated from the cartilage, from the helix down to the lower edge of the cartilage and the meatus is nearly closed by the tumor. The tumor is tense, but fluctuates, and is fully one inch in thickness. It is tender to pressure and has recently become so painful that he could not follow his occupation. He very promptly consented to the operation which was proposed. I thought it advisable to open the tumor thoroughly from top to bottom, so that its inner surface could be more effectively treated, deeming this plan more judicious than that of evacuating it through a small opening, or of aspirating the contents of the sac. I made a crescentic incision over the anterior surface of the tumor, extending from the upper edge of the cartilage to the lower edge. The upper portion of the tumor consisted of yellowish red serum; but the bulk of it consisted of blood clots. After these were turned out the cartilage was found in good condition. Its surface was generally smooth, there being only three or four small spots where it appeared absorbed or eroded, and these did not go through its entire thickness. After washing the sac out with a weak sublimate solution I plugged it with iodoform gauze, and then applied a roller bandage. This was changed daily. A few times the inner surface of the sac was brushed with a mixture of iodine, carbolic acid and glycerine. The cavity closed rapidly by the replacement of the skin to the cartilage. He remained under treatment only two weeks, and when he left the wound was not closed, but from appearances then it did not seem as if there would be any contraction or deformity of the auricle.

64 W. Seventh street.

FUNCTIONAL DEAFNESS AND DESTRUCTION OF THE MEMBRANA TYMPANI, CAUSED BY AN ELECTRIC SHOCK WHILE USING A TELEPHONE.

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The following case is of interest, because of its unusual character and as illustrative of the danger of using the telephone during local electric storms:—

On August 12th, 1891, J. B. C., æt. 45, a saloon keeper, was sent to me by Dr. Tucker of this city. The patient gave the following history. Four days previous, during a thunder-and-lightning storm, he stepped to the telephone in his saloon to deliver a message, placed the receiver to his ear, when a flash of lightning ensued and he fell to the floor unconscious. He remained in this state about four minutes. On regaining consciousness, the pain was so intense in his left ear, the corresponding side of his face, left breast, arm and leg, that he fainted twice. The intensity of the pain diminished in about four hours.

His present condition is as follows: Left leg, foot and left index finger are numb. There is considerable soreness, and pain of a neuralgic character, in the left breast, to the left of and below the nipple. The senses of taste and smell are decidedly impaired. The field and acuity of vision are normal. He is almost totally deaf in the right ear, a chronic condition due to catarrh. of the middle ear, the membrana tympani presenting the appearance usual in this condition. The left membrana tympani is almost wholly destroyed. The edges of the portions remaining are ragged, uneven and congested. The mucous membrane of the middle ear is considerably swollen. There is no discharge. Hearing is $\frac{0}{20}$ tested by watch. A C tuning fork can be heard $\frac{1}{2}$ inch by aerial, and less distinctly by bone conduction. He can only hear the voice by shouting in the ear. A guarded prognosis was given, and treatment was directed more especially to the right ear, in the hope that it might be to some extent improved, in case the injured ear remained permanently deaf. At the end of two weeks no improvement in hearing had taken place in either ear, but the pain and local inflammation in the left had subsided. The senses of taste and smell were still impaired. The patient being compelled to leave town, I did not see him again until October 12th, when he came to my office, and stated that a few days previous he was sitting in his barn when he suddenly realized that he could hear in his left ear. Testing with his watch, he could hear it distinctly. His hearing was then w $\frac{2}{20}$, and he could hear ordinary conversation at 13 feet. The membrana tympani was being rapidly restored, and all other effects of the electric shock had disappeared. September 15th, 1892, 13 months after the date of injury, the patient came to my office, and I found the membrana tympani entirely restored and hearing w $\frac{2}{20}$ and could hear low voice at 20 feet.

It is interesting to note in this case the destruction of the membrana tympani. The objection may be raised, that having no previous knowledge that the membrane was intact, there remains a doubt whether it was really destroyed by the electric shock? Previous to the accident the hearing of the

injured ear was excellent, and no history of disease could be obtained. The ragged edges of the remaining portion of the membrane, so unlike the appearance in ulcerative disease, the intense pain and inflammation following the accident, and the subsequent complete restoration of the membrane, I think, leaves no doubt that it was destroyed by the electric fluid. No traces of the contact of the fluid could be seen external to the membrana tympani. It is evident that the deafness was mainly due to the impairment of function of the acoustic nerve. In regard to the exact nature of the injury, causing the loss of function, we must speculate more or less. There may have been a minute capillary hemorrhage, but as all symptoms occurred on the injured side, including pain and impairment of special senses, and as function was suddenly regained, the case, I believe, should be classed with the traumatic functional neuroses.

Bearing upon prognosis in similar cases, it is interesting to note that the first improvement in hearing took place nearly two months after the injury. No treatment was employed except simple measures to allay the local inflammation in the injured ear, as no special line of treatment seemed indicated. Like other forms of traumatism, each case of electrical injury will suggest the most rational course to pursue, and will demand special treatment. It should not be forgotten that in injuries of this kind, as in all traumatic neuroses, the psychic element may be the main factor in the functional disturbance. Where this is evident, or suspected, hypnotic suggestion should be employed. Faradization has also an important place in the treatment of selected cases, according to the best authorities. But like suggestion, I believe in cases of electrical injury the good results following the use of this agent are most apparent where there are hysterical manifestations.

There is no longer doubt that there is great danger in the use of the telephone during local thunder-and-lightning storms, and this fact should be made plain to the public. There seems to be greater danger in the use of the individual instruments than of those in the central offices, as in the latter lightning arresters are employed, reducing the danger to a minimum.

THE TREATMENT OF ACUTE CATARRHAL INFLAMMATION OF THE MIDDLE EAR.

By James T. Campbell, M. D.

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In a recent article it is reported that of 10,000 deaf-mutes in institutions in the United States and Canada fifty per cent. of these are afflicted through having suffered from acute inflammation of the middle ear in infancy; scarlet fever of itself being credited with about thirty per cent. of these cases; while an untold multitude go through life with hearing to a greater or less extent impaired from damage done to the membrana tympani and ossicles. From this showing it appears to me that there must be something radically wrong in the treatment generally adopted.

As to prophylactic measures the nasal douche should never be employed because of the great danger of forcing fluids up through a patent Eustachian tube and its gaining admission to the tympanic cavity.

In all cases of inflammation of the tonsils or inflammation in the naso-pharynx, local antiseptic treatment should be adopted. Where there is interference with the free opening and drainage of the Eustachian tube during the act of swallowing, as a result of hypertrophy of the adenoid tissue in the naso-pharynx, or a polypoid degeneration of the posterior portion of one of the turbinated bodies, one should at once remove the obstructing mass.

When, however, inflammation of the middle ear has developed, local treatment must be employed. Instill into the external ear five to ten drops of a warmed 5% solution cocaine with a 2% solution of resorcin, tilting the head in such a position that the drops will become applied to the whole surface of the membrana tympani. Leave these drops in for ten to fifteen minutes and then remove with a pledget of cotton-wool. Repeat this every three to four hours so long as pain in the ear continues. Place a large gauze compress, which has been wrung out of a hot boracic acid solution, over the ear and cover the whole with oiled silk so as to retain the heat and moist-

ure, changing this sufficiently often to keep the gauze constantly hot.

Inflate the middle ear with Politzer's rubber bag, using air which has been filtered by placing a small pad of antiseptic cotton-wool over the tip of the bulb during inspiration, force out the air and repeat this process once or twice before using. Now place the patient's head in such a position that the Eustachian tube of the affected side is directed downward and forward during inflation; in this way not infrequently the exudation into the middle ear, particularly when it is serious in character, trickles down the patent tube. Repeat this inflation several times during the course of the day.

Should the physician not possess a Politzer's bag he may in an imperfect way try and accomplish the same result by taking a piece of rubber tubing, put one end within the child's nostril and hold it in place by pinching the tip of the nostril between the index finger and thumb and then blowing very forcibly through the other end when the child swallows. With a child old enough to do as directed, the proper time to compress the air bulb in inflating the ear is just as the soft palate is raised during the act of swallowing a sip of water or when having him say the word "huck." In an adult the most thorough plan is by using the Eustachian catheter in conjunction with the air bulb.

General derivative measures should be adopted by the use of saline cathartics, diuretics, diaphoretics and cardiac sedatives, while in addition it is well to place, in the case of a child, one, and in adults three, leeches in front of the tragus for fifteen minutes to produce rapid depletion; being careful, however, to have a pledget of cotton-wool in the external meatus to prevent the entrance of leeches into the external ear.

These measures proving unavailing, as evidenced by pain increasing in severity, the membrana tympani being much reddened and swollen, with bulging and a yellowish coloration of the posterior segment, one must perform myringotomy.

The incision is made in the postero-inferior segment, from near the tip of malleus downwards. Then take Politzer's rubber bag and by way of the Eustachian tube, force the exudate in the middle ear, out through the opening in the membrana tympani. Carefully syringe out the external ear with a saturated boracic acid solution, and, after drying out the ear, blow in some very finely powdered boracic acid and place in the external meatus a plug of antiseptic cotton-wool. Continue the inflation twice daily and see that the incision in the membrana tympani keeps open, so long as any exudate

continues to collect in the middle ear and can be forced out with the rubber bulb.

By carefully carrying out the above described measures we will have a much smaller percentage of deaf-mutes in our midst, and have fewer sufferers from perforated membranæ tympani and chronic suppuration of the middle ear, with all its attendant evils.

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I. ANCHYLOSIS OF THE CRICO-ARYTENOID ARTICULATION.—II. CONGENITAL BONY OCCLUSION OF THE POSTERIOR NARES—A REPORT OF CASES.

By O. Prescott Bennett, M. D.,

INSTRUCTOR LARYNGOLOGY AND RHINOLOGY, CHICAGO POLICLINIC, CHICAGO, ILL.

I. Fixation of the crico-arytenoid articulation is of very rare occurrence. There is little doubt, however, but that it does occasionally occur. Very little can be found in our text-books on this interesting condition, in fact, nearly all of them fail to mention it at all. Bosworth,[1] in his late work, which is probably as complete as any ever published, simply mentions it in a few words, as occasionally the result of a perichondritis of the arytenoid cartilage.

It may be caused by a variety of conditions. Among others may be mentioned chondritis, perichondritis, synovitis and trauma. It is thought by some that it may be produced by mere disuse of the parts, as in laryngeal paralysis, or where the movements of the joint are arrested by changes in any of the neighboring structures.

The perichondritis, or chondritis may be primary or secondary. Mackenzie[2] believes perichondritis due to typhoid fever or syphilis, to be the most common cause of this affection. Schroetter[3] reports eight cases due to typhus, while Lunning[4] and Sestier[5] have both frequently found it the result of typhoid fever. So far it is impossible to determine whether it has been due to the specific poison of the disease, or to the position of the patient, he lying supine for many days. It is not improbable that both may have something to do with it.

The synovitis may be of a gouty, rheumatic, or a simple catarrhal variety. Anchylosis of this joint, due to a rheumatic synovitis, must certainly be exceedingly rare. So far as I am aware, only two cases have so far been reported. The symptoms vary according to the position in which the arytenoids are fixed, on the cricoid cartilage, dyspnœa and dysphonia being the two prominent ones. The former is present if the cord is fixed near the median line; the latter, if it is drawn aside.

The diagnosis of this condition is attended with considerable difficulty, it being quite impossible, in some cases, to dis-

tinguish between it and paralysis of either the abductors or adductors. It may be assumed to exist, however, where there is a fixation of one or both cords, with some marked irregularity of the arytenoids, or upper part of the cricoid cartilage, and a previous history sufficient to account for it.

Very little can be done in the way of treatment which will be of any benefit to the patient. Forcible dilatation may be tried, however, if the cords are fixed in the median line.

The following is a report of a case which is undoubtedly due to a rheumatic synovitis of the crico-arytenoid articulation:—

Mr. A. E., German, aged 30, a butcher by occupation, consulted me March 1st, 1892, on account of his voice which was very weak and hoarse. It had been so for about two years, but has been steadily growing worse during the last six months. When I first saw him he was hardly able to speak above a whisper. General health at present good. Has an occasional pain in his limbs. He has never had syphilis, nor has he ever sustained any injury to his neck. He has had several attacks of inflammatory rheumatism, the last being in 1889. At that time he had some pain in the region of the larynx, and his voice began to get hoarse shortly after. There is slight dyspnœa on exertion.

On making laryngoscopic examination, the left cord was found to be immovably fixed and its posterior one-third somewhat swollen and congested. The left arytenoid was also very much swollen and congested.

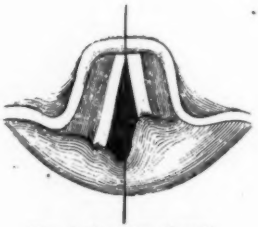

FIG. 1. Position of cords during inspiration.

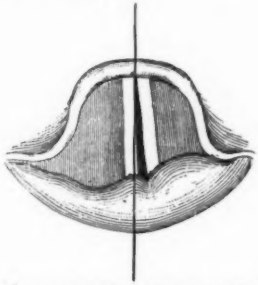

FIG. 2. Position during phonation, the right cord passing across the median line approximating the left or fixed cord.

There was some stenosis of the nasal cavities from hypertrophy of the turbinated bodies. Physical examination revealed no evidence of any pulmonary disease.

The local treatment consisted of daily applications to the layrnx, by spray, of a solution of sulphate of zinc, three to five grains to an ounce of water. The hypertrophies were reduced by means of the galvano-cautery. Internally the patient was given ten grains of iodide of potash, three times a day. This was gradually increased to thirty grains three times a day; also the sulphate of strychnia, one-twentieth of a grain, four times a day, which was gradually increased to one-tenth of a grain.

Under this treatment the swelling and congestion were gradually reduced, the voice was perhaps a little clearer and stronger. However, at the end of four months, the cord still remained fixed, and the patient discontinued treatment.

II. Congenital occlusion of one or both posterior nares is not very frequently found. However, it is undoubtedly the

most common of all congenital anomalies of the naso-pharynx. The proportion of cases in which the occlusion is due to bone is extremely small. After some research I have found twenty-two of these cases reported. In seven of them both sides were occluded, eight were right-sided, five left-sided, and in the remaining, the side affected was not mentioned.

The etiology of this condition is quite obscure. It is very seldom, if ever, accompanied by any malformation or lack of development in any other part of the body. This, together with nearly all congenital malformations, is thought by many to be due to an arrest of development in fœtal life. It is more probable, however, that they are caused by the opposite condition; an excessive development or overgrowth of the vomer or palate bones, due to hypernutrition.

The symptoms are those common to all cases of nasal stenosis.

The following is the history of a case which came under my care:—

C. D., aged 18 years, male, consulted me August 4th, 1892, for relief of his nasal trouble. He breathes through his mouth most of the time. Has never been able to breathe through the right nostril. Takes cold very easily. Has no impairment of hearing or sight, but sense of smell somewhat impaired on left side, and gone entirely on right side, probably due to the fact that he was unable to sniff up olfactory particles. Is subject to very severe frontal headaches, brought on by mental application. Is somewhat anæmic. Patient complained of an excessive amount of thick, ropy, muco-purulent secretion which accumulates in the right nares, and being unable to blow that side of his nose, was obliged to remove it with his fingers.

The external surface of the nose was normal. An anterior rhinoscopic examination showed an excessive amount of secretion in the right nasal cavity. Removing this, by means of forceps and a cotton mop, the cavity was seen to be slightly contracted. The anterior two-thirds of septum was straight, the posterior one-third deviated to the right, completely closing the cavity. This obstruction was found to be bony on application of the probe. The left nasal cavity was about one-third closed by hypertrophy of the inferior turbinated body.

Posterior rhinoscopy was made with some difficulty. After several attempts the right nostril was seen to be completely occluded.

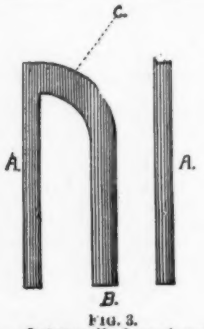

FIG. 3.
A — Outer wall of nasal cavity.
B — Nasal septum.
C — Bony occlusion post. nares.

After thoroughly anæsthetizing the parts with a solution of cocaine, I succeeded in making an opening through the bony wall, by means of a trephine and bur driven by an electric motor. The opening was enlarged sufficiently to correspond with the nasal cavity and packed with antiseptic wool. The pain was not excessive, but there was considerable hemorrhage. The piece of bone removed from the trephine was three-eighths of an inch in thickness and of extreme density.

The after-treatment consisted in keeping the parts clean, by means of warm antiseptic solutions and the wearing for a few days of a gutta-purcha tube.

About three months after the operation, the patient called at my office again and informed me that he was able to breathe through his right nostril with freedom. The discharge had somewhat diminished, and there was slight improvement in the sense of smell.

FIG. 4. Nasal Drill Bur X 2.

The bur which I used I have found especially adapted to bony growths of extreme density. It was made by L. J. Mason & Co. of this city, from a sample loaned me by Dr. E. Fletcher Ingals. The cutting part is about three-eighths of an inch long and three-sixteenths of an inch in diameter at the largest point. It is coarsely cut in a spiral manner, giving it a series of sharp blades, then cross-cut in the opposite direction, producing on each blade a series of sharp teeth. After being cut and carefully tempered, the teeth or blades should be stoned to a keen edge.

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CONSTITUTIONAL TREATMENT OF CATARRH.

By Dr. G. B. Bushee.

CHICAGO.

This treatment is evidently not so popular as the local, though perhaps as efficacious. Certainly it seems as though enough has been and is being written regarding the local or specific treatment of catarrh.

Possibly this article may be of benefit in arresting the wholesale local treatment, and directing some of it to the constitutional relief of the lesion in question.

Far be it from us to question the efficacy of local treatment in many cases, and perhaps it is essential in all cases to a certain extent, but the constitutional effect of remedies locally applied is often more beneficial than the local or primary action.

The improper cauterizing, snaring *et al.* so much in vogue at present, is most to be deprecated.

It does not always save time, either, for if the part is unnecessarily cauterized, an artificial lesion is produced which compels longer treatment than the original hypertrophy or whatever trouble existed previously.

The nasal reflexes are a strong argument for the constitutional treatment; especially is this noticeable in certain forms of nasal and pharyngeal catarrhs, when the liver and stomach are the "powers behind the throne," as it were.

The heat-producing nerve-centres being deranged, the circulation is disturbed and thus we have in a nutshell, the fundamental cause of nine-tenths of the cases of catarrh.

Can this be cured by local means?

The constitutional treatment may be subdivided into first, hygienic; second, dietetic; third, hydropathic, and fourth, medicinal.

Under the first head it is the physician's duty to advise his patients to use the prophylactic treatment and guard against sitting in drafts, wearing insufficient clothing on body and feet, slight exposure while perspiring, etc. We all know that the violation of the above laws of health causes catarrh sooner or later, but we are careless of reminding our patients of them, or even about obeying them ourselves. Particularly those who have a predisposition to catarrhal diseases should be careful about exposing themselves, and on the other hand beware of undue coddling of any part.

Pure wool is the best fabric to be worn next the skin, in all seasons of the same weight. Protection from excessive cold is best attained by the heavier outer garments.

As to dieting: eat only such food as is nourishing, easily digested, adapted to the patient, his daily avocation, and especially avoid rich food that is liable to cause a torpid liver.

Again we must not forget the hydropathic preventive as well as cure — the cold plunge or shower bath to those whose physique will permit is often advantageous, and the morning is the best time, as a rule, to take these health baths.

The proper use of internal medication is beneficial, but its discussion has been purposely left to the last and now may be left to the attending specialist.

It is of secondary importance, but always bear in mind that as the disturbance of the nerve-centres causes catarrh, remedies which are properly directed to those same centres will be most beneficial.

507 Sixty-Third street.

TREATMENT OF ATROPHIC RHINITIS.[1]

By M. D. Lederman, M. D., New York.

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After accepting the kind invitation of your worthy president, to present a paper on some disease pertaining to the nasal cavities, and learning that fetid rhinitis was quite prevalent in your vicinity, I decided to write a few words on this interesting subject. It is not my object to go into detail regarding the etiology and pathology of this untoward disease, but merely to give as briefly as possible some methods of treatment which have proven the most practical and beneficial. In reviewing the current literature, we are confronted with many and varied methods of the management of the affection, truly the "*bete-noire*" of the rhinologist. Before taking up any of the methods thus employed, I will in a few words attempt to describe the disease and some of its most characteristic symptoms.

By the term "atrophic rhinitis," we understand a peculiar process affecting the nasal mucous membrane, in which, as stated by Bosworth, there is a decrease of the covering epithelium, with profuse desquamation, and a destruction of the glandular layer. The theories as to the causation of the atrophic process are as numerous as the methods of its treatment. Woakes claims it is due to some central or reflex vaso-motor defect, causing malnutrition of the diseased area. Voltolini asserts that in his experience, he has found atrophic rhinitis a disease of women, and so places the cause as probably due to some unexplained influence of the genital system. Wright has observed the disease most frequently in women, generally developing at the age of puberty. He notes that the ozæna is usually more offensive at the menstrual period, and believes, with Voltolini, that the genital organs may in some way influence the cause of the affection. Others have again noted that sex has no relation or influence upon the production of the ailment. Experience has demonstrated to me that the majority of atrophic cases are more frequent in males, especially in patients whose appearance showed some signs of a systemic dyscrasia. We must bear in mind that this

[1] Read before the North Texas Medical Association, December 13th, 1892.

atrophic process may develop in well-nourished individuals, as well as in those of the lower classes, and I do not deny the fact that in some cases the cause of its development is yet to be found. I believe with the majority of observers that this form of rhinitis may follow the hypertrophic stage, in which instance, it is due to the pressure of the increased cellular proliferation upon glandular structure, thus causing an atrophy of the secreting epithelium. Where atrophic rhinitis is accompanied by antrum disease, or disease of the other accessory sinuses, it is a question whether the sinus trouble is due to the atrophic process, or vice versa.

Ozæna is the most prominent symptom accompanying this disagreeable and persistent disease. The odor arising from the decomposition of the crusts (which are due to the drying of the secretion) is sometimes unbearable. Patients have volunteered the information, that in traveling in public conveyances, their fellow-passengers could not stand the stench, and would leave the patient's side to his embarrassment and disgust. Again, the disease so harassed the mind of another patient, that he was driven to the verge of insanity. I mention these facts to impress upon you the importance of this symptom. Although the danger, as far as immediate dissolution is concerned, is nil, yet we must always consider the pitiable condition of one who is the unfortunate victim of this dreadful disease. With the symptoms of ozæna, the expulsion of nauseating crusts, the dryness of the pharnyx (in some cases due to the extension of the atrophic process, in others due to the freedom with which the air reaches it, having no resistance to encounter in the roomy nasal chambers), together with the direct examination of the nose, the diagnosis is an easy one. Here we find accumulations of dried, inspissated crusts of muco-pus, some clinging to the middle turbinated bones, others to the floor of the nose and the septum, while the same state of affairs exists in the upper pharynx. The mucous membrane is dry, showing the atrophic process, and in the majority of cases, that absorption of the turbinated tissues has already taken place. Ulcerations of the septal mucous membrane sometimes occur, giving rise to troublesome hemorrhages, and finally ending (if left to themselves) to perforation of the septum. Thus the process goes on, extending rapidly to the pharnyx and larynx.

Hurriedly I have attempted to picture a well-marked case of this common ailment. Taking up the subject of treatment, I divide it into preventative and stimulative. I purposely avoid the term curative, for my experience has led me to believe, that wherever a true atrophy of the mucous membrane has existed for any length of time, we can only hope

to improve that portion of the membrane which has still some glandular activity. We must be careful in our promises to the patient, as to the time required for the relief of their sufferings. Authorities place the duration of treatment at from six months to three years. We must certainly not extend the hope that their affliction may be cured in a short time; for after we have seen the symptoms disappear, the patient free from the offensive discharges, and absent himself from further treatment, he returns in a few months with a recurrence of the disease, and the disappointment of not having been cured. This disease needs constant observation, and after we have succeeded in ameliorating the existing condition, we should impress upon the patient the necessity of appearing every month for examination, until the affection has been limited.

By the term preventative treatment, I include everything which can be gained by the treatment of the hypertrophic stage of rhinitis, as well as the management of the minor degrees of the catarrhal inflammations. In this era, the rapid advancement in the realm of nasal surgery leads one to become too sanguine over the results recorded by enthusiastic observers, and we gradually fall into the line with those who imagine they must remove all ecchondromata, hypertrophies, spurs and turbinated bones, which may possibly account for the numerous reflex symptoms of our patient. It is here where a halt should be cried, as much damage has been done by unnecessary meddling. I have witnessed operators remove nearly the entire middle turbinated bone, for the relief of some reflex headache, and after its removal there remained an immense cavity, naturally predisposing towards an atrophic process. Acknowledging that the pressure of the turbinated tissue may have caused the symptoms complained of, I also claim that the removal of a small portion of the bone, on the septal surface, or the cauterization of the turbinated tissue, may have produced relief, and not predisposed the patient to an unpleasant sequela.

The subject of stimulative treatment is an important one, as upon it rests the hope of obtaining good results. The first step in the management of atrophic rhinitis is to see that the nasal chambers are kept perfectly cleansed. This can only be successfully accomplished by the physician, as it is not sufficient to give the patient an alkaline wash or spray, and imagine that this will bring on the desired result. The crusts must be removed by the cotton-wrapped probe, assisted by post-nasal syringing. This should be done regularly, daily if possible, or every other day. As long as the crusts remain in the nasal cavities, so long will the odor exist. As to the methods of

cleansing the nose at home, the douche and the atomizer are convenient. The douche is by far the best instrument for the purpose. The one which has proven the most satisfactory in my hands, is known as the Dessar cup. It is a glass cup, terminating in a nozzle at one end, which is shaped to fit into the nostril. The manner of its application should be shown to the patient, and a few directions given. The cup should be filled with the medicated solution, preferably lukewarm, the head inclined slightly backwards, and the nozzle inserted tightly into the nostril. As soon as the liquid is felt in the throat, the head should be brought forward and the liquid allowed to return by the other nostril. This is aided by the contact of the fluid with the pharyngeal wall, causing some reflex action upon the soft palate, which adjusts itself to the pharyngeal wall, and cuts off the lower pharynx.

The Burgess atomizer is, to my mind, the best instrument of its kind; but where we have the scab formation, the fine spray of an atomizer does not have the necessary effect. Among the earliest washes recommended in nasal diseases, was a solution of common salt; and to-day, especially in atrophic cases, it is largely used in combination with other of the alkaline salts. A formula often prescribed, which is of considerable value as a douching solution, is that composed of the following:

R Sodii bicarb.
Sodii chlorid.
Sodii biborat, aa.
M. Sig. Teaspoonful to the pint of water.

This solution may be used twice or three times a day, in the douche, about four to six ounces being the quantity necessary at each cleansing. Seiler's solution is a very pleasant as well as useful one, for douching. The solid ingredients of this formula are compressed into a tablet, and are obtainable in this shape. In prescribing these tablets for our patient, we must be careful to use the formulator's name, as otherwise our patient is liable to obtain a tablet containing the bichloride of mercury, and by its use become salivated, as I have seen follow. One of Seiler's tablets dissolved in two ounces of water, makes the solution. Of late, lysol, a new antiseptic, has been brought forward, supposedly to be possessed of powerful deodorizing properties. This production is a derivative of the creosol group, and can be used for douching purposes, in a one per cent. solution. Creoline has also been of service as an antiseptic wash, in the same strength. Enough of the crystals of permanganate of potash dissolved in a pint of water, to make it assume a pink color, has also

been employed as a detergent. Passing by the numerous formulæ for cleansing, I must not fail to mention Dobell's solution. Withstanding the test of years, it still holds its own, and is used by a large number of practitioners, as a universal spray. Listerine itself, or in combination with some of the alkaline salts, makes a pleasant as well as an effective cleanser.

Coming to the more important element in the treatment of the atrophic process, namely, the local application, we have an immense variety from which we can select. The main object sought for, is to stimulate the remaining glandular structure, to increase its activity, that it may assist in bringing about the moisture, which is so necessary to prevent the accumulation of scabs and to relieve the sensation of dryness. For this purpose, Gottstein has suggested the mechanical effect of cotton. He introduces pledgets of cotton into the nares, to take the place of the atrophied turbinated bones, and to assist in concentrating the current of air, by diminishing the calibre of the nasal space. The cotton acting as a foreign body, irritates and stimulates the mucous membrane, thus causing secretion, which assists materially in moistening the inspired air, preventing to some degree the formation of crusts, and allaying the dryness of the throat. The cotton may be left in position for two or three days. To this method, Joins has added the saturation of the cotton pledgets, with glycerine; their introduction into the nares to be made twice a day, and left there for ten minutes. Their removal should be accomplished by blowing the nose, and the performance repeated as long as there is a flow of mucus. The glycerine is supposedly used for its osmotic action. For gradual stimulation of the mucous membrane, nitrate of silver has achieved considerable success. Bresgen recommends its application in powder form, in combination with starch, beginning with the formula.

R Argent. nit. .....gr. ¾
Amyli pulv.....grs. 154.

He gradually increases the strength of the powder, until he reaches fifteen (15) grains of the silver, to the same proportion of starch, *i. e.*, one hundred and fifty-four (154). Silver may also be serviceable in a solution, starting with a one per cent. solution, and gradually increasing until we reach a twelve, or even fifteen, per cent. solution. As soon as the solution loses its power of stimulation, we must increase its strength. In some patients, the application of the stronger solutions of argentum causes severe headaches.

The late Dr. David Phillips advocated the employment

of ichthyol in oily solutions, in atrophic rhinitis, and reported some cases where its use was followed by extraordinary good results. I have derived some benefit from its application in atrophic laryngitis. It should be used in a five (5) per cent. solution of keroline; treatment being made every other day, and a two (2) per cent. solution being given to the patient at home, to be sprayed twice daily. As with other solutions, its application must be preceded by some cleanser. After a faithful trial, Wright expressed the opinion, that thymol, in watery solution, has shown itself to be worthy of continued favor. The formula he prefers, is:—

R Thymol.....gr. iss
Alcohol.....
Glycerin.....āā ʒiss
Aqua dest.....ad ʒi

M. This is to be applied with the spray, and should be diluted at first, gradually increasing to the above strength. W. Phillips has found in aristol a valuable addition to the long list of medicaments recommended in the treatment of this ailment. He prefers the solution to be an oily one, noting that thirty (30) grains to the ounce is sufficient and adaptable for spraying purposes. Lowenstein's formula, *i. e.*:—

R Aristol.....ʒi
Collodion (flexible).....ʒi

he has found of considerable service in syphilitic ulcerations of the septum, and also in wounds and ulcerations of the mucous membrane. Among other methods lauded, Braun introduces vibratory massage of the nose. "Copper sounds covered with cotton and suitably medicated, are introduced into the nostrils, and made to vibrate from two hundred to three hundred times a minute, reaching in succession, all parts of the nasal cavities." For this treatment, the observer claims most excellent results, stating that the atrophied turbinated bodies return to their normal proportions. Galvanism has also been tested, and found satisfactory, but somewhat difficult in its manner of application.

During the last year my attention was called to some clinical tests made wtih the latest of the newer antiseptics, europhen. This substitute for iodoform is obtained by the action of iodine upon phenols in alkaline solution. Europhen is a yellow powder of a resinous character, adhering tenaciously to the mucous membrane, and has a saffron-like odor. It is easily soluble in alcohol, ether, chloroform, and oily menstra, not however in water or glycerine. Containing about twenty-eight (28) per cent. of iodine in its composition, it is proba-

bly due to this factor that the drug has proven so efficacious in stimulating the diseased mucous membrane. After testing the merits of this powder for a considerable period, I can heartily recommend its continued employment, as a treatment which has given me great satisfaction. Cleansing the nasal passages of the crusts by the aid of the post-nasal syringe and the cotton-wrapped probe, a preparation of europhen is applied in the form of a spray. The solution is an oily one, containing forty-eight (48) grains of the antiseptic, to the ounce of benzoinol. This is all that the benzoinol will take in solution. With the spray nearly all parts of the nasal cavities may be reached, while with the saturated carrier this cannot be accomplished. The benzoinol lubricating the lining membrane, leaves a pleasant sensation and also assists materially in keeping its ingredients in contact with the diseased surfaces. In very chronic cases I follow the spray by an insufflation of the europhen in full strength. The patient must be seen every other day, or at least twice a week, at the office, and treatment continued regularly. At home the alkaline douche should be prescribed, and europhen in oily solution, or in the form of an ointment, must follow the cleansing twice daily. It is sufficient to give a half a drachm of the europhen to the ounce of benzoinol, for the home use, as pharmacists can readily dissolve thirty (30) grains of the drug, which is somewhat difficult to do with the limit. The patient may spray the solution into the nose, or apply it by means of a camel's hair brush, sniffing the solution up the nose after the application. We can use a larger proportion by prescribing an ointment. Cold cream or oxide of zinc ointment may be used as the base, the strength being a drachm to the ounce. This may be applied by means of a brush, twice a day, after thorough douching. In closing, I must not fail to call your attention to the importance of treating the general system. Much benefit may be derived by tonic treatment, and we will gain considerable advantage by administering some alterative to all our atrophic cases.

1029 Park Avenue.

CLINICAL NOTES ON A CASE OF EPITHELIOMA OF THE TONGUE TREATED BY METHYL BLUE.

By James E. Nichols, M. D.

NEW YORK.

The history of this case is as follows:—

Mr. W. S., aged 50, American, married, wood carver, referred to me February, 1892, by his family physician, Dr. F. A. Bottome, for a throat difficulty. His family history is good. Father died at 68 of cardiac effusion; mother still living in good health; brothers and sisters in good health; one great aunt died of cancer of the breast. His personal history is excellent; denies without hesitation any syphilitic disease, and his statement is confirmed by his family physicians for many years; no evidence of former specific lesions. Habits regular and temperate, and have always been such; was in the army during the civil war but not in active service; smokes about one cigar a day; drinks at rare intervals and then very little; general health excellent but has lost some in weight in last four months.

About two months previous (December, 1891) he first noticed slight pain and soreness in throat on swallowing, but thought nothing of it, ascribing it to a cold. At night the pharynx and mouth were dry and aching. Had a feeling as if his tongue was too large. During the day had a constant desire to swallow and an excessive salivation. Had some thickness of speech "as if he had a hot potato in his mouth," but no hoarseness or aphonia. Some fatigue on speaking long. Felt as if a foreign body were lodged on his tongue. Had no tenderness externally and no visible swelling except a slight enlargement of the submaxillary lymphatics on the right side.

Examination showed the nasal cavities and naso-pharnyx normal. At the base of the tongue on the right side, extending down into the glosso-epiglottic fossa, externally to the tonsillar border and internally to the median raphe, was seen a tumor about an inch in diameter, with a broad base, nodular and indented surface, with several points of ulceration, dark pink in color, and rather vascular. It lay against the epiglottis and filled in the fossa pretty well. It was covered with slimy, tenacious mucus, difficult to void. To the touch it was rather dense, not friable, and imbedded well in the muscular tissue. It did not appear to extend beyond the median raphe of the tongue. The epiglottis was swollen, congested and thickened, especially on the right side, but was not ulcerated. The tumor was slightly painful to the touch and very sensitive to heat and cold.

A communication from Dr. Bottome stated that he suspected a malignant growth, and cuttings were made for microscopical examination. Slight hemorrhage followed. These sections were sent to two independent investigators, Drs. F. W. Reyling and T. J. Harris, and their report was, that it was undoubtedly an epithelioma, which coincided with my own diagnosis. The patient was told the character of his disease, but wished to avoid an operation, and I determined to try the effect of local applications of methyl blue, as advocated by Einhorn, Stilling, Combemale, Valude, and others.

The patient was put on the use four times daily of an application, made by himself with a cotton pledget, of methyl blue (Merck's) in water, of grs. 40 to the ounce, being directed to rub the solution thoroughly over the part. In addition he was given Liq. Potassii Arsenitis in small doses (gtt. ii, 3 t. d.) and cod liver oil. The subsequent history, as taken from my notes, is as follows: Feb. 28th—Has had marked decrease in pain and

dysphagia, appetite better, swollen glands softer and smaller, tumor seems more shiny and dense, and ulcers have healed. Increased applications of methyl blue to eight times a day. Applied at this visit a button of fused chromic acid to a few small nodules. Has gained one pound. March 2d—Much improved in regard to pain and reports his tongue as feeling freer and more movable, and mouth less choked up. Mucous discharge more watery. No ulcers to be seen and growth perceptibly shrunken. March 6th—No pain on eating, feels relieved; articulation clearer; reports a bluish tinge to urine but complains of no pain in lumbar region nor on urinating. Examination of urine negative. Increased Fowler's solution slightly. March 9th—Still improved in feeling and appearance. Has noticed for a day or two some roughness in roof of mouth and upper surface of tongue. Inspection shows a slight herpetic eruption in former situation, and some enlarged filiform papillæ on the tongue, which are quite sensitive. March 13th—Herpes has disappeared; urine again normal in color. On examination no albumen or casts, and sp. gr. and reaction normal. March 22d—No recurrence of herpes and papillæ not irritable. Have been making tri-weekly applications of chromic acid. Growth very much smaller, and now free from the epiglottis. Glands almost disappeared. Sleeps well and is able to work. For a few days has discontinued Fowler's solution because of a slight gastric disturbance. March 27—Notices a slight loss of taste, or rather everything seems to have the same flat, insipid taste, but can perceive strong savors. Lips are dry. Urine again colored bluish green. Feels first rate. This improvement continued until about May 15th, when the patient caught cold, and the tumor took on a sudden and rapid recrudescence. The ulcerations again formed, the growth was visible, some on the left side, and the glands on the left side began to enlarge. The pain and dysphagia was as great as ever and there was a profuse secretion, causing much discomfort; the epiglottis became much thickened and œdematous. On the left side under the tonsil was a small irritable mass looking like a hypertrophied lobule of the tonsil itself. The voice became much affected, the patient lost flesh rapidly and became insomnic and much discouraged. The methyl blue was stopped and cocaine used for the dysphagia but with little relief. For two weeks I suggested and advised operative treatment but he was unwilling to submit, and I determined to resort again to the methyl blue. A fresh solution was ordered in a strength of 25 per cent. in alcohol, and this was applied as before. Immediate relief was experienced as at first. The pain, dysphagia and swelling lessened, the ulcers healed and the patient gained flesh. The last of June he went to his birthplace in Maine, being instructed to continue the methyl blue and report progress. He gained as before until he felt well for about four weeks, when he experienced another exacerbation but of entirely another character. The tumor on the tongue had given him no trouble at all, but a phagedenic ulceration of the pharyngeal wall had set ip, which caused him much pain and discomfort, and quickly ran him down. He was ordered to use a solution of iodoform in ether alternately with the methyl blue, and this gave him great relief, but the ulceration remained. The last of August he returned to the city in a very bad condition; cachexia marked. The lingual growth had subsided and the surface of the tongue was smooth and clear, while the epiglottis presented many punctate ulcerations. The cervical glands were large and tender. As I was about to leave town for my vacation and the pharyngeal ulceration presented an appearance of syphilis (the first symptom observed at all suspicious), I ordered him ten grains of iodide of potassium four times daily, in increasing doses, and also two minims of creosote in sherry wine, three times daily. It was without much hope that this was done. After four weeks of absence, during which I had heard nothing from him, I saw him again a changed man. His weight was normal, and he presented every appearance of robust health. The pharynx was entirely healed, with rather a glazed surface, but secreting normally. The tongue was absolutely free from any abnormal appearance, his deglutition was perfect and his articulation clear. In fact, he had entirely recovered, and at present writing, remains so.

From the history of this exceedingly interesting case, several questions naturally arise:

1st. It will at once be said that this was a case of tertiary syphilis, and while I cannot absolutely disprove this, I believe it was not, because:

(a) A specific history was entirely wanting of either hereditary or acquired syphilis. The man is one of intelligence and probity, and thoroughly understood the importance of settling this point. His statements were confirmed by outsiders.

(b) The microscopic examination by two independent investigators gave the same result, viz.: that the growth was an epithelioma.

(c) The unilateral character of the growth, and the appearance of the ulcerations on its surface were not typical of syphilis.

(d) The pain attending it was characteristic of a malignant tumor.

(e) All other confirmatory evidences of syphilis were wanting.

(f) The lingual tumor disappeared *before* the use of the iodide of potassium.

On the other hand we find that the pharyngeal ulceration was syphilitic in appearance and that it speedily cleared up under the use of iodide.

There are some facts in regard to the methyl blue of interest.

1. A strength of solution of 25 per cent. has never been used, as far as I can find record, for local application, Sée in his experiments reports using solutions of strength varying from $^1/_{300}$ to $^1/_{25000}$ of alcoholized water.

2. The drug was rapidly absorbed into all the tissues, as evidenced by the appearance of the skin and mucous membranes and the tumor itself, which was deeply impregnated by the color.

3. In spite of this charging of the tissues and the elimination by the kidneys, there was no evidence at any time of any renal irritation or disease. STANGENEFF reports a case of parenchymatous nephritis following its use.

4. The anæsthetic qualities of the drug were decided.

The diagnosisis debatable, but I believe the case to have been one of epithelioma.

456 Lexington Ave.

A CASE OF HÆMOPTYSIS FOLLOWING GALVANO-CAUTERIZATION OF THE INFERIOR TURBINATED BONE.[1]

By Dr. Wendell C. Phillips.

NEW YORK.

W. H., 30 years old; artist. Family history good; has had catarrh of the naso-pharynx from infancy, otherwise his general health has been good up to two years ago when he had pneumonia. Since this time he has taken cold easily and has had a quite constant cough with muco-purulent expectoration.

He came to the Manhattan Eye and Ear Hospital, November, 1871, and was found to have largely hypertrophied inferior turbinated bones; the left one was cauterized by means of the galvano-cautery on that date.

Six hours after operation he began to have severe pain in the face from the upper teeth to the temple upon the side which had been operated upon, it being most severe in the superior maxillary bone. This condition continued for two weeks, during which he was in bed and without treatment. He was too weak to go to the hospital and said he did not know he could send to the hospital for the doctor. He believes he had a high fever during this time.

His friends then had him removed to the N. Y. hospital and there his temperature was found to be about 104° during the entire day.

Three days after admission he had a severe hæmoptysis, losing a large amount of blood, after which he rapidly developed a cavity at the apex of the left lung. He remained in the hospital six months and was discharged and improved. He has had one slight hemorrhage since.

On September 26, 1892, I cauterized the other inferior turbinated bone, following up with daily after treatment. There was no reaction and healing has been accomplished with no return of the old symptoms.

In the title given to this history I was careful to avoid any suggestion that the hæmoptysis was directly caused by the previous cauterization. There can be but little doubt that the occurrence was merely a coincidence.

The lack of after-treatment, for which no one was to blame, and the consequent symptoms of reaction and possible absorption of septic material may have become the exciting cause of a hemorrhage of the lungs in a patient possessed of latent tendencies towards phthisis.

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[1] Read before the N. Y. Academy of Medicine, section in Laryngology, October 26, 1892.

TREATMENT OF ULCERS OF THE CORNEA.[1]

By Barton Pitts, M. D.

SAINT JOSEPH, MO.

In speaking upon the subject of ulceration of the cornea, I shall confine my remarks as much as possible to the treatment of such conditions. The etiology, classification and symptoms can be obtained, systematically set forth, in any modern text book upon the subject. What is of most value in the science of *ophthalmology*, as well as medicine in general, is the individual experience of competent observers in the treatment of diseases.

Ulcers of the cornea, like other diseases, depend upon various causes, and demand varying treatment according to the conditions present. I have seen stubborn and intractable ulceration of the cornea, the result of one or more unobserved inturned eyelashes, resist all kinds of medication, topical and general, but upon removal of the foreign body healing was prompt.

As to the causes of ulcers of the cornea I would designate them natural and unnatural. Some of the natural causes being injuries, prolonged irritation from the presence of foreign bodies in, or on, the cornea; a diseased condition of the lids, especially in long standing cases of trachoma; purulent conjunctivitis and constitutional dyscrasia. Such conditions are ever present, and will always demand correction. The unnatural causes I would designate, over severe, and undue medication, which is by no means infrequent. Only within the past week an instance came under my observation, with the history of slight conjunctivitis treated with some severe, and painful caustic, presumably *nitrate of silver*, resulting in ulceration of the cornea. Upon the second visit of the patient the medical attendant was absent, and treatment was not administered; regret was however expressed by the doctor upon returning and finding the eye sloughed out, that the second application had not been made, assuring the patient that had such been the case, the ulcer could have been *burned off*. This is only a recent instance of very many such cases that have come under my observation. In addition to the caustic and irritating solutions, such as *nitrate of silver*, *blue stone*, *jequerity*, etc., I am inclined to believe that in severe purulent conjunctival affections, that strong solutions of cocaine predispose to ulceration and sloughing of the cornea. Any

[1] Read before the Northwestern Medical Society of Missouri.

solution of nitrate of silver stronger than five grains to the ounce dropped on the cornea, I consider dangerous. The use of bluestone in the acute inflammatory stage of trachoma for which it is so much used, I consider also dangerous to the cornea. In the chronic stage of trachoma, however, even when there are ulcers of a superficial character present, which is very frequently the case, bluestone, applied to the lids, I consider especially efficacious; as a milder form of stimulation in such chronic and deseased conditions of the lids I use yellow oxide of mercury, in varying strengths, from ten grains to eighty grains to the ounce of vaseline. In superficial ulcers, of a phlyctenular character, I use calomel dusted in the eye, with considerable friction. Atropia in solution of from two to four grains to the ounce, is especially sedative in ulcers of the cornea, associated with much inflammation of the conjunctiva. In ulcers not associated with acute inflammation I do not hesitate to use freely as a local sedative solutions of cocaine as strong as forty grains to the ounce. Hot applications, in the form of a large cloth or towel wrung out of boiling water, but never poultices, is both soothing and beneficial. I have reserved for the last the mention of an agent that has proven more than satisfactory to me in curing ulcers of the cornea. It does not deserve to be put in the same class with other local agents, but rather as the one and only agent, safe and certain, for the curing of ulcers of the cornea, so far as can be said of any artificial means of curing disease. I refer to the topical effect of the *actual cautery*. I consider it the safest and surest of all agents, even in superficial ulcers of a phlyctenular character, I prefer to use it; and in deep ulcerations, involving the substance of the tissues, and likewise in extensive sloughs of the cornea, it is to be depended upon. Its action can be carefully limited to the diseased portion, destroying it, without interfering with the nutrition of the healthy structures, and it leaves less opacity of the cornea than any other form of repair. My method of using, is first to cleanse the parts as thoroughly as possible with a 1-5000 solution bichloride of mercury, and touch thoroughly the entire ulcerated portion of the cornea, with the point of the platinum electrode, heated to a red heat by an electric battery. A battery useful for such a purpose, however, is inconvenient to transport, and expensive. For ordinary, occasional use, a silver probe, or the point of a strabismus hook heated in the flame of an alchohol lamp to a bright heat and quickly applied, is equally efficacious and inexpensive. Such a procedure seems formidable and is not always best explained to the timid; but it is safe, quick and marvelously efficacious in its

effects. Of course an eye to be cauterized should be cocoainized and fixed firmly by the pressure of the finger upon the globe, through the upper and lower lids, or the patient etherized; care being exercised that the cautery point be limited to the diseased portion of the cornea, and touched lightly, that the anterior chamber be not penetrated. Usually one application, if properly performed, is sufficient to bring about a healthy reaction, with healing. Should repeated cauterization, at intervals of three or four days, be necessary, such can be safely done.

613 Francis street.

DOES HOMATROPINE, AS GENERALLY USED, REVEAL THE WHOLE ERROR OF REFRACTION?

By W. Franklin Coleman, M. D., M. R. C. S., Eng.

PROFESSOR OF OPHTHALMOLOGY POST-GRADUATE MEDICAL SCHOOL OF CHICAGO; OCULIST AND AURIST TO ST. ELIZABETH AND CHARITY HOSPITALS.

While the opposite answers of equally competent observers are evidence that the above question is still unsettled, it seems to me desirable to present and call for further testimony. The solution of the problem is surely possible, then why such diversity of opinion and practice?

It may be "the wish is father to the thought" that homatropine is perfectly efficient for refractive work. Certainly it is devoutly to be wished that, in the large class of bread-winners, we could (without inaccuracy in testing) dispense with the incapacitating atropine. But there is that, perhaps, larger contingent of children and the leisure class, to whom the enforced rest of the eyes secured by atropine is a great benefit. Again, if the symptoms are serious, such as pain in the eyes and head, as is the case in 73% by actual count in my own cases, then, even the actually and imaginatively busy patient should, and usually would, give up sufficient time for the best result, if that necessitates the use of atropine.

Let us now call a few witnesses and study the testimony for and against homatropine.

Oliver, from experiments upon emmetropic eyes, and upon eyes put to rest by atropine, demonstrates that gr. $\frac{1}{60}$ of homatropine instilled into the eye thirty-two minutes after gr. $\frac{1}{20}$ produces complete paralysis in fifty-four minutes, which remains stationary more than thirty minutes.

Chisholm does not find any cases refractory to the influence of homatropine. He instills a few drops of grs. vi. ad. ℥j, holds the lids apart for a minute and tests the eyes in thirty to sixty minutes.

Savage has not been disappointed in homatropine once in one hundred times. His practice is to use grs. viii. ad. ℥j., one drop every five minutes for forty-five minutes, and to commence the work of refraction ten minutes later.

Jackson and Randall believe homatropine is as reliable as any mydriatic. The former says that the use of homatropine at too long intervals accounts for its proving unsatisfactory in the hands of some. He makes not less than three and usually

more instillations at intervals of five to fifteen minutes and tests in from one to two hours after.

Starkey tabulates twenty-five cases in which homatropine was as effectual a paralyzant as atropine. His was a solution used during forty-five minutes, at intervals of five.

Risley tabulates thirty-five cases and states that homatropine appeared superior to atropine in fourteen eyes; equal in twenty-three; and inferior in twenty-two. Risley had two drops of homatropine grs. vi. ad. ʒj. instilled at home every three hours for from one to three days or more, and at the office, every fifteen minutes during one to one and a half hours before examination.

Wood cites six cases in which refraction under homatropine and atropine were identical in four, and practically the same in two. Doses of homatropine and cocaine āā gr. $\frac{1}{50}$ were inserted one disc in an hour, or a second twenty minutes after the first, and the examinations made not earlier than sixty minutes or later than ninety after introduction of the discs.

Ayres says he had used homatropine for months in the examination of refraction, and had found it very satisfactory.

Thus far a sufficient number of witnesses have given such positive and weighty evidence in favor of homatropine that their testimony must compel the jury to give to their opinions the most serious consideration.

Let us now summon a few of the witnesses for the other side.

Oliver, as stated by Holt, cites P. Stewart's paper (*News*, March, 1889), as embodying his views, *sic.:* —

"The fact of the constant irritant action of repeated instillations of homatropine on the deeper tunics of the eye, gives answer why ametropia cannot be properly estimated, hence the drug should be avoided in the correction of refractive errors. Oliver stated to me by letter and personally, that he does not depend upon homatropine but uses atropine constantly in his refractive work."

Holt reports one case among many, to illustrate the fact that homatropine cannot be relied upon for controlling the accommodation for the purpose of fitting glasses.

Cotter has tried homatropine grs. v—xx. ad. ʒj and subsequently used atropine, which often showed the former had revealed only $\frac{1}{3}$ of the error.

Noyes had been led to think that homatropine had only a fleeting and partial control over accommodation.

In 1884, Webster said to me that Dr. Agnew and he had given up the use of homatropine, deeming it insufficient for complete paralysis, and they had returned to the use of atropine.

The members of the Chicago Opthalmological Society, from their verbal statements seem pretty equally divided in favor of and opposed to the use of homatropine.

As for myself, it has so frequently occurred that patients were completely relieved under atropine who had previously failed to get satisfactory relief from glasses fitted under homatropine, prescribed by myself and others, that I lost confidence in the latter drug, and, in 1887, undertook to test its efficacy upon a number of patients. The results I will restate: Seven were examined under a solution of homatropine hydrobromate grs. viii. ad ʒj instilled from four to ten times in an hour, and subsequently tested under atropine grs. iv. ad. ʒj t. i. d. from one to three days. Nine were refracted under homatropine grs. xx. ad. ʒj and atropine similarly used.

In the seven cases there was in one an increase of H. 0.25 D. under atropine. In three cases an increase of H. 0.50 D. In one an As. of 0.60 D. was revealed in each eye. In one an added As. 0.60 D. in the O. D. and an added As. 2 D. + 0.65 s D. in O. S. In one a change of 20° in the Cyl (O. D.) and an increase of H .25 D. + As. .25 D., axis changed 10° (O. S.).

In the nine patients there was developed under atropine an increase of H. and a change in the As. as follows: In two eyes + 0.25 D.; in four + 0.50 D.; in one 0.6 D.; in three 0.75 D.; in one 1 D.; in three 1.50 D.

In one eye + 1 D. As. disappeared; in one an increase of As. + 0.25 D.; in one As. 0.33 D. less; in one As. 50 D. less. In two eyes only the refraction remained the same under atropine.

Having ceased regretfully to rely, in refraction work, upon a solution of homatropine, used in any strength or manner, I gladly began a trial of the discs of homatrapine and cocaine āā gr. $\frac{1}{50}$ kindly furnished by Dr. Wood soon after the publication of his already mentioned paper, and have continued to use them almost daily since. They have proven in my hands much more efficient than the solution, for reasons well urged in Wood's paper. Unfortunately, in my experience, even the discs are found wanting and my hopes are again crushed.

In corroboration, I will first cite the result in forty-one eyes first examined one hour to one and a half hours after inserting the discs twice, at an interval of half an hour to one hour, and again examined usually on the following morning under the discs similarly repeated. While a table of the refraction would be as realistic as anything from the pen of Ibsen, I forbear and write the bald result.

In twenty eyes, the refraction was the same, and in twenty-

one there was more error under the discs repeated — the difference in all cases being greater than 0.25 s D.

Again in order to compare the refraction under the discs as above used with that shown under astropine grs. iv. ad. ʒi. t. i. d. subsequently instilled from one to three days, a table comprising forty-seven eyes in twenty-four patients is appended. The table may be thus summarized: —

Under atropine there is an increase of H. 0.25 in six eyes; +0.50 in five; +1.00 in one; an increase of H. and As. 0.25s + 0.25c in two; 0.50 + 0.25c in one; 0.50 + 0.50c in two; 0.50 + 0.75c in one; 0.50 + 1.25c in one; 1.00 + 1.25c in one. H. increased and As. shown + 0.25 — 0.25c in one. + 0.25 + 0.25c in one; + 0.25 + 0.50c in one. As. increased 0.50c in one; + 1.25c in one; + 1.50c in one. As. shown + 0.25c in one. H. increased and As. disappeared + 0.25 — 0.75c in one. My. less — 0.50s in one; My. increased and As. increased — 0.75 + 1.50c 90° in one. — 1.25 + 1.50c 90° in one; 1.25 + 1.50c 90° in one. My. decreased and As. shown — 0.25 — 0.50c in one.

Refraction the same under disc and atropine in twelve eyes; dissimilar in thirty-three; not stated in three.

In only three of the twenty-four patients was the refraction the same in both eyes under the discs and atropine, allowing a difference of not more than 0.25c sD. to be considered the same. The practical result is that 87½ per cent of the above patients certainly did not exhibit under the discs the true state of their refraction. The state of 12 per cent. was corroborated under atropine, which we assume as approximately true. Eleven of the patients were under twenty years of age, and thirteen over twenty — the average of the latter being 26.44 years.

Let us now briefly review the evidence for and against homatropine.

The mere statement of those who express themselves as satisfied with homatropine lacks to us argument and the evidence of their faith. Other surgeons have probably given up the so desirable homatropine after much tribulation and proof of its inadequacy.

Oliver's experiments seem to refute the efficacy of homatropine as used by Chisholm. Savage and Ayers do not state any convincing reasons for their belief in homatropine. I have tested in the same thorough manner urged by Jackson and do not get the same fortunate results.

The circumstances of the testing by Starkey I regret not knowing.

Risley, after prolonged use of homatropine, demonstrates atropine superior to homatropine in 50% more eyes than homatropine is superior to atropine.

Wood's cases, for a small number, are strong evidence of the thorough work of homatropine.

Oliver's experiments with mydriatics gives his advice "not to depend upon homatropine" great weight. Holt & Cotter and myself and probably Agnew and Webster gave up homatropine as unreliable after much subsequent testing under atropine.

As to the state of refraction under various examinations, I am willing to admit a variation of 0.25 sD. is of little, if of any consequence, and may be due to error in testing; and that a variation of 0.25c may or may not be important.

My own testing was done with the direct ophthalmoscopic method and the test case, and recently by electric light illumination, and with all the carefulness and control I could exercise.

Without disputing the great value of the ophthalmometer and all other corroborative methods, I believe the most accurate results can only be secured by test glasses, and they can be secured with few exceptions and with perhaps some loss of time by the test glasses alone.

Finally, while much preferring the discs to the solution, I dare not rely upon homatropine in any form in patients presenting serious symptoms.

With the consciousness that this paper is not the "last word," and an almost despairing hope that we surgeons may agree as to the value of homatropine, there is at least the consolation of the multiplication table left to us.

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No.	Age.	+ Co. and + Hat Discs.	REFRACTION.	V.	+ At.	REFRACTION.	Vis.	REMARKS.
1	24	Once in 1 hour	O D + 0.75. O S + 0.75.	6-12 6-12	t. i. d. 2 days	O D + 1.25—0.25c 180°. O S + 1.25—0.25c 180°.	6-8 6-8	+ Discs preceded eve. and morn. by Solu. Hat.
2	24	10.30 and 12 Ex.* 1	O D + 2.25 + 2.25c 180°. O S + 2.50 + 1.75c 180°.	6-12 6-12	t. i. d. 7 days	R + 2.00 + 2.75c 180°. L + 3.00 + 1.75c 180°.	6-12 6-12	Atropine immediately after the discs.
3	28	One hour	R + 4.00c 110°. L + 4.00c 60°.	6-12 6-12	t. i. d. 2 days	R + 4.00c ax 110°. L + .50 + 4.00c 60°.	6-12 6-12	+ Solu. Hat and cocaine in eve. and morn. before discs.
4	24	11.30 and 12 Ex. 12.30	O D refuses glass. O S —0.25—0.50c 180°.	6-12 6-12	t. i. d. 5 days	O D + 0.50 D. O S + 0.50 D.	6-8 6-8	Atropine succeeded immediately the discs.
5	12	2 in 1 hour	O D + 5.00 D. O S + 4.50 D.	6-18 6-18	t. i. d. 2 days	O D + 5.50 D. O S + 5.50 D.	6-12 6-12	Atr. followed discs.
6	17	2 in 1 hour	R—5.00—0.75c 180°. L—6.00—0.50c 180°.	6-12 6-12	t. i. d. 2 days	R—5.00—0.50c 180°. L—5.50—0.50c 180°.	6-12 6-12	Atr. followed discs immediately.
7	14	1 hour	O D + 1.25—0.75c 180°.	6-8	t. i. d. 2 days	O D + 1.50 D.	6-8	Atr. immediately followed discs.
8	20	1 hour	O D + 0.75 + 0.25c 90°. O S + 0.25 + 0.50c 180°.	6-12 6-12	t. i. d. 1 day	R + 1.00 + 0.25c 180°. L + 0.50 + 0.25c 180°.	6-8 6-8	+ Solu. Hat and cocaine 3 times eve and morn. before discs.
9	13	10.30 and 11 Ex. 11.45	R—0.75 + 2.00c 90°. L—0.50 + 1.50c 90°.	6-18 6-18	t. i. d. 2 days	R + 2.00—3.50c 180°. L + 1.25—3.00c 180°.	6-12 6-12	Atr. followed discs immediately.
10	11	10.15 and 11 Ex. 11.30	R + 0.75 D. L + 0.75 + 0.25c 90°.	6-6 6 6	t. i. d. 11 days	R + 0.75 D + 0.25c 90°. L + 0.75 + 0.25c 90°.	6-6 6 6	Atropine followed discs.
11	26	11.35 Ex. 12.35	R + 0.50 + 4.25c 90°. L + 2.25c ax 90°.	6-18 6-18	t. i. d. 4 days	R + 4.50c 100°. L + 3.50c 90°.	6-18 6-18	+ Solu. Hat 4 times eve. and morn. before discs.
12	33	6.40 and 11 Ex. 11.30	R + 0.50 + 0.25c 90°. L + 0.25 + 0.25c 90°.	6-6 6-6	t. i. d. 2 days	R + 0.50 + 0.25c 90°. L + 0.50 + 0.50c 90°.	6-6 6-6	+ Solu. Hat 5 times in 2 days and thrice in 1 hour before discs.
13	11	1 hour	R + 5.50 + 0.50c 90°. L + 4.50 + 0.25c 90°.	6 8 6-8	t. i. d. 2 days	R + 6.00 + 1.00c 90°. L + 5.00 + 1.00c 90°.	6-8 6-8	+ Solu. Hat 3 times in eve. and thrice in morn. before discs.
14	15	1 hour	R + 0.75 D. L + 0.25 + 0.25c 90°.	6-12 6-12	t. i. d. 10 days	R + 0.75 D. L + 0.25 + 1.75c 180°.	6-8 6 8	+ Solu. Hat twice eve. and morn. before discs.
15	22	2 in 1 hour	R + 1.00 D. L + 1.00 D.	6-6 6-6	t. i. d. 2 days	O D + 1.00 D. O S + 1.00 D.	6-6 6-6	
16	26	8.15 & 9.50 Ex. 10.20	R + 2.50 + 0.50c 180°. L + 2.50 + 0.50c 180°.	6-6 6-6	t. i. d. 2 days	R + 2.50 + 0 80c 180°. L + 2.75 + 0.25c 180°.	6-6 6-6	
17	30	11.30 and 12 Ex. 1	R + 0.50 + 3.00c 90°. L + 0.50 + 3.00c 90°.	6-18 6-18	b. d. 2 days	R + 0.75 + 3.00c 90°. L + 0.75 + 3.00c 90°.	6-18 6-18	

* Ex., *i. e.* Examination.

No.	Age	+ Co. and + Hat Discs.	REFRACTION.	V.	+ At.	REFRACTION.	Vis.	REMARKS.
18	31	2 in 1 hour 3 days	R + 1.25. L + 1.25.	6·8 6 8	t. i. d. 3 days	R + 1.50 + 0.50c 90°. L + 1.50 + 0.25c 90°.	6·7 6·12	Refraction the same on 3 consecutive days under + Hat. Atr. used 2 mos. later.
19	21	2 in hour 2 days	R + 1.50 + 0.25c 90°. L + 1.50 + 0.25c 90°.	6·7 6·7	t. i. d. 4 days	R + 1.75 + 0.25c 90°. L + 1.50 + 0.25c 90°.	6·7 6·7	Discs 2 in 1 hour, Ex. 1 hour later, then at + t. i. d.
20	33	2 in 1 hour	R—0.25—0.25c 90°. L + 0.50 D ax 180°.	6·6 6·6	t. i. d. 2 days	R—0.75c 90°. L + 0.50c 180°.	6·6 6·6	Atr. followed discs.
21	20	10.45 & 11.30 Ex.* 12.30	R + 3.50 + 0.75c 60°. L + 3.00 + 0.75c 90°.	6·18 6·18	t. i. d. 2 days	R + 2.50 + 2.00c 60°. L + 2.50 + 2.00c 110°.	6·12 6·18	In accom. R + 2.00c 60° L + 2.00c 110°.
22	17	10.45 and 11 Ex. 12.20	R + 0.25c 90°. L + 0.50c 90°.	6·6 6·6	t. i. d. 2 days	R + 0.25c 90°. L + 0.50c 90°.	6·6 6·6	
23	19	11 and 12 Ex. 12.30	R + 1.00—2.50c 15°. L + 0.75—5.50c 165°.	6·18 6 18	t. i. d. 1 day	R + 1.50—2 50c 15°. L + 0.75—5.50c 170°.	6·18 6·18	
24	22	12 and 12.30 Ex. 1	R + 1.00 + 1.50c 90°. L + 0.75 + 1.00c 90°.	6·12 6·8	t. i. d. 3 days	R + 1.00 + 1.50c 90°. L + 1.00 + 0.75c 90°.	6·12 6·8	Discs preceded eve. and morning by Solu. + Hat.

* Ex., *i. e.* Examination.

NITRATE OF SILVER TREATMENT OF PURULENT CONJUNCTIVITIS.

By W. T. Montgomery, M. D.

CHICAGO.

In what I have to say of purulent conjunctivitis I shall not make any distinction between this disease, ophthalmia neonatorum and gonorrhœal conjunctivitis.

While the specific form is usually the most virulent type of this disease it is not always so. And as what I have to say will be upon the treatment and more especially the use of the strong solutions of the nitrate of silver in the treatment we are only concerned as to the purely purulent form of the disease. The most enthusiastic advocates of the use of nitrate of silver in the treatment of this disease do not recommend it in strong solutions until the purulent stage has been reached.

It is in the strength of the solutions in the purulent stage that my experience is at variance with the text-books and the literature generally on this subject.

When the secretion becomes thick and purely purulent, the lids soft and conjunctiva velvety, then the time has come for the use of the strong solutions of the nitrate of silver regardless of the condition of the cornea.

When this stage is reached nearly all of the text-books recommend brushing the conjunctiva once daily with the gr. v. to gr. x. solution of the nitrate of silver. A few recommend it as strong as gr. xxx. to gr. xl. to the ℥i., and nearly all recommend the mitigated stick or the solid stick in the most severe cases. I have had little experience with these latter but I have had a great deal of experience with the solutions. In my earlier experience I tried pretty thoroughly the weaker solutions of nitrate of silver in the treatment of purulent conjunctivitis an I found them most unsatisfactory. I mean by weaker solutions those of less strength than gr. lx. to ℥i.

I know some will say it does not make so much difference as to the strength of the solution used as it does in the manner of applying it. That we can get the same effect from a gr. xxx. sol. thoroughly applied as from a gr. lx. solution lightly applied. I admit this but it has been my practice to make my applications thorough, no matter what the strength of my solution. In a large per cent. of the cases I think the weaker

solutions will hold the disease in check but I have used them in cases in which they seemed to aggravate the disease and which subsequently yielded rapidly to a stronger solution. So that I have come not to trust in a weaker solution than grs. lx. to ʒi. to arrest the purulent discharge in this disease, and frequently use it stronger. A brief history of two recent cases will best outline the treatment I have found the most satisfactory: —

Case 1, T. B., age 19, mechanic, residence Chicago, was first seen by me at my office July 15, 1892. Patient states that he has had gonorrhœa about three weeks. One week ago his left eye began to inflame. He had been bathing the eye with cold water and using simple washes but it had grown rapidly worse. On examination lids enormously swollen but soft enough to be readily everted. Profuse creamy discharge; cornea clear. Was obliged to treat patient as an office patient. Right eye healthy. This was covered with Buller's shield and saved from infection. The lids of the left eye were thoroughly everted and the conjunctiva cleansed of pus by dropping clear water on it and pressing, not rubbing, the surface with moist absorbent cotton. A four per cent. solution of cocain was then dropped upon the conjunctiva and immediately afterward the gr. lx. to 3i. solution of the nitrate was freely brushed to the palpebral and retrotarsal portions of the conjunctiva. I make it a point to roll out the folds both above and below as completely as possible and apply the nitrate solution to the bottom of the cul de sac, care being taken to avoid the cornea. The nitrate solution is neutralized by dropping clear water on the surface brushed and pressing the moist absorbent cotton to remove shreds of coagulæ. The cocain solution is again used and the lids restored to position and the cold compress applied.

The patient was given a prescription for gr. x. to 3i. solution of boracic acid. A brother who was with the patient was directed to separate the lids and instill this solution between them once an hour during the day and three or four times during the night. Iced compresses were directed to be used constantly during the day for the first week. The nitrate solution was repeated once daily, the patient coming to my office alone and being his own nurse after second visit until July 30, when he was discharged entirely recovered. In this case the improvement was marked at each succeeding visit, so the gr. lx. solution was continued, not only until the purulent discharge was gone but until the the thickened conjunctiva had returned to its normal condition.

Case 2. E. B.'s babe, age 2 weeks, only three blocks from my own residence, was first seen by me October 2, 1892. A trained nurse was in attendance. It was stated that the doctor who attended the mother does not believe in washing new born babies and ordered this one greased and laid away. The second day the nurse noticed that the eyes were swollen and discharging. Some lotion was prescribed and numerous domestic remedies had been used but the eyes had been getting worse all the time. On examination, the lids of both eyes were much swollen. The discharge profuse and creamy. The retrotarsal folds were so thickened and the papillæ were so much enlarged that it was with the greatest difficulty that I could expose the corneæ. To my surprise both corneæ were clear. The gr. lx. solution of the nitrate was used, as in case 1, also cleansing eyes with boracic acid solution and use of ice compresses.

The improvement was marked at each subsequent visit until the fourth day, after which the condition remained about the same until the seventh day, when gr. lxxx. to 3i. was used. The improvement was again marked until the twelfth day, when the trouble came to a standstill again until the sixteenth day. I now used gr. cxx to 3i., applying the solution thoroughly once daily until the 22d day of treatment.

The purulent discharge was all gone by this time, but there remained slight thickening of conjunctivæ with sufficient muco purulent discharge to glue lids together during the night. For this the gr. lx. solution was used

a few times. The 27th day after treatment was begun the patient was discharged entirely recovered. The eyes are as clear and bright now, two weeks after treatment was left off, as if the babe had never had sore eyes.

The iced compresses were used at first for one hour after each treatment. At the end of two weeks the babe cried and manifested such discomfort that they were left off. The boracic acid solution was instilled between the lids once an hour during the day and three times during the night as long as the purulent discharge continued

I do not consider it important to have a nurse present with the patient day and night. I am quite sure harm is sometimes done by the too zealous efforts of the nurse in trying to cleanse the eyes.

I have given this outline of these two cases at the risk of being accused of repetition because the first was an adult and the disease clearly specific and yielded rapidly to the gr. lx. solution.

The second was that of an infant and the disease was probably not specific but severe, and did not yield until the stronger solutions had been used.

The points I wish to emphasize in the treatment of this disease then are: First. The nitrate of silver solution, at least gr. lx. to ʒi. once daily. If the purulent discharge does not continue to lessen, increase the strength of the solution up to gr. cxx. to ʒi. I have not found it necessary to go above this. I have not had any bad after-affects from the use of these solutions as cicatricial contractions, staining of tissues, etc. Second. Make the application with the medium sized camels hair brush and be sure to brush the entire palpebral and retrotarsal portions of the membrane.

Third. Cleanse the eyes with as little irritation as possible. Wiping the eyes and especially the use of the syringe or pipette for washing out the conjunctival sac cannot be too strongly condemned.

Fourth. The use of the iced compresses for at least one hour after each application of the strong solution. The best mode of applying these compresses is to have a dozen or more small pledgets of absorbent cotton on a block of ice and change often enough to keep them cold. In adults and children old enough to express themselves I have found these grateful and I believe them to be a valuable aid in reducing the inflammation.

Fifth. The antiseptic lotion the least irritating to the eyes is the best and the boracic acid solution is my preference. Used in the manner here indicated I do not know of any remedy which has given me greater satisfaction than the nitrate of silver in the treatment of purulent conjunctivitis.

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THE RETENTION OF BINOCULAR VISION WITH TWO GLASSES OF DIFFERENT STRENGTHS.

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I am well aware that the subject of this article does not fully convey the impression I desire to create, and have been unable to put in succinct and concise words the full text of my article. With your kind indulgence I will endeavor to explain what I mean by the retention of binocular vision with the use of two glasses of different strengths.

It is not an unfrequent and yet not an ordinary occurrence for one to be called upon to adjust glasses that differ widely from one an other in degree and kind to the same patients. In some cases we may use a weak minus or a weak plus glass, be it cylinder or spherical in one eye, and a strong glass, either of the same or a different denomination, in the other eye. It is to this fact that my attention has been directed for some time past and I will endeavor during the course of the article to put before my readers such facts and data as will enable us to draw some definite conclusions in regard to the matter under consideration, and arrive at some satisfactory explanation as to how binocular vision is retained and how both eyes will work harmoniously under different conditions.

We know well that the eye always seeks the larger and more distinct retinal image, and we furthermore know that corresponding retinal fields must be used, *i. e.*, corresponding retinal areas, stimulated to produce binocular vision. Should there be two different areas receiving the same image at the same time binocular vision would be destroyed and diplopia would as a natural sequence follow, and if the conditions were such that separate images persisted through the inability of one or the other eye, in focusing on different retinal areas, the weaker eye would be thrown out of the field of vision and gradually become amblyopic through disuse and diplopia cease on account of monocular vision.

This fact teaches us one thing, that to have diplopia both eyes must function, and furthermore, when we have *no diplopia*, does that signify that one eye is doing all the work and the other doing nothing, lying dormant, so to speak?

What conditions exist in eyes that we know to be so widely different in their refractive power and apparently work separately and yet we have no diplopia, no monocular vision, no amblyopic eye, but both eyes working together, viz.: binocular vision as we normally and naturally have it? It is to this most important subject that I would direct your attention.

In treating this subject I would divide the kinds of cases into two different classes; the first class I would designate as those in which we find normal conditions i. e., where the patient is hypermetropic or myopic in one eye and the opposite refraction in the other eye with high or low degrees of error, of course widely differing in their degree of strength, and to this class will belong also such cases as may show a great difference between two glasses of the same kind in the two eyes, be they plain, sphericals or cylinders.

To the second class would belong such cases as may have through advanced age or injury acquired a cataract in one eye and by removal produced different conditions in the two eyes needing the application of two different glasses, either differing in strength or kind. This second class is one of extreme importance in that it brings us intimately into the consideration of whether eyes with high degrees of myopia should have the lenses removed, thus converting the myopic eye into an hyperopic eye and the application of convex glasses instead of concave ones. As I have already briefly pointed out above, my first class being such a class of cases as would lead us to expect diplopia from the conditions which exist, and it is a matter of surprise why two eyes working under different conditions should work harmoniously and in unison.

In some cases, I must admit that they are rare; we see in one eye conditions that call for the adjustment of a myopic cylinder and just as marked conditions and requirements that call for the application of an hyperopic cylinder to the other eye. In another instance we may see one eye wearing a plus spherical and the other eye a plus cylindrical or a minus spherical, in fact we see almost every arrangement of glasses in the frames. One eye may have a weak cylinder, be it concave or convex, and the other eye have a strong combination glass. I am not prepared to give any data as to the frequency of this irregularity, but that it is seen occasionally we cannot question. It is not to the occurrence that I wish to direct your attention but it is to the explanation of such occurrences and how the eyes work in unison and harmoniously together.

We know well that when in the examination of eyes we find certain conditions in one eye we expect to find corresponding conditions in the other eye. When we find hyperopia in one eye we expect to find hyperopia in the other, and the same

applies to myopia. We furthermore expect supplementary angles in the adjustment of the two cyclindrical glasses, that is, if one cylinder is placed at 90° we expect the cylinder for the other eye to be placed at the same angle; if one cylinder is adjustable at 60° the other should find its suitable angle at 120°. This I say we expect to find and in most cases we do, but occasionally exceptions are noted. But it is not to this condition I would call your attention but to that condition seen in eyes that differ so materially from one another in their refraction as to require two glasses that may differ from each other very widely both in strength and kind.

For the sake of illustration let me take a case that may elucidate my idea more clearly than I can in words.

A. B., age 26, complains of pain on near work, cannot read any length of time without eye pains or headache. R. E. vision $\frac{1}{1}\frac{5}{5}$ Snellen's test type, reads brilliant type at from eleven to twelve inches comfortably, no astigmatism apparently; with homatropine he develops from +0.50 D. to +0.75 D. latent hyperopia with a very minute fraction of hyperopic astigmatism at 90°. L. eye the vision is more impaired for the distance, having $\frac{1}{5}\frac{5}{0}$ Snellen's, and only reads comfortably brilliant No. 1 type at about seven inches, under a mydriatic vision is brought to $\frac{1}{2}\frac{5}{0}+$ by the use of the following combination: S—2.75 D.⌒C.+1.75 D. ax. 90° with the punctum proximum for near work about ten inches, comfortably at nine inches. Now the existing conditions in these two eyes are very different, and the images formed in these two eyes certainly differ from one another, and still binocular vision is retained and maintained. But surely this discrepancy or abnormity between these two eyes is compensated for in some other way.

I think the whole explanation of binocular vision in such cases is to be found in the maintenance of the muscular equilibrium and if we find insufficiency of any of the recti muscles usually the internal, why the opposite one should be cut, virtually making the one displaying the insufficiency or weakness stronger and more able to maintain the eye in equilibrium.

Should the required insufficiency exist in the muscle to be severed, *i e.*, should the muscular insufficiency compensate for the difference in the two glasses tenotomy is not at all necessary and we see a case in which two glasses of different strength can be comfortably worn, and furthermore I think that in all cases where such conditions exist, as we are now dealing with, and when we have made a complete and thorough examination of the refraction and still trouble persists, I think a careful examination of the muscles and a correction of any esophoria,

hyperphoria or exophoria, will relieve the trouble either by the application of prisms properly adjusted or by tenotomy which latter has been given such prominence, and justly so I think, by Dr. George T. Stevens of New York.

We now pass to that second class of cases in which glasses of different kinds and strengths are worn and binocular vision is retained, and to this class we supplement all cases in which a cataract has formerly existed, and the same has been duly and properly removed, leaving such a condition of affairs that call for the application of a weak glass in one eye and a strong cataract glass in the other to supplement the absent lens.

I would, for the sake of clearness, subdivide this class into two subdivisions viz.: (a), preëxisting hyperopic eyes; (b), preëxisting myopic eyes.

Now we are well aware that as the eye ages stronger glasses are needed. This is the case in hyperopic eyes and in myopic eyes weaker glasses are needed as the eye ages and in many cases a myopic eye accepts hyperopic glasses. This fact constitutes the subdivision of this class.

The first subdivision is the one commonly seen in the vast majority of cataractous eyes; the one eye accepts a weak convex glass while the other one from which the cataract has been removed accepts a very strong convex glass, usually combined with a more or less strong plus cylinder at 180° or thereabouts. It is a fact worthy of some consideration why two eyes which have always been accustomed to work together harmoniously, being suddenly subjected to such a change, should still maintain that harmony unimpaired. This I think depends upon two conditions: 1. The proper correction of all the hyperopia and full adjustment of any astigmatism, and as the astigmatism constantly changes cataractous glasses should be changed according to the rapidity of the changes in the corneal convexity. 2. The eye should be maintained as nearly as possible at its former conditions. Accommodation is entirely lost in an eye that has lost its lens, and hence two glasses should be used, one for distance and one for near work.

The maintenance of unison in the two eyes depends largely upon the production of retinal images of equal size in the two eyes and not so much upon muscular balance and equilibrium, as is the case in the former class of cases which we have had under consideration. The nearer we produce the natural conditions by means of glasses to such eyes the more successful will be our results and the less discomfort to our patients, and it is in these conditions that we see the wonderful adaptability of the eye to extraneous influences and circumstances and without doubt in many cases the accommodation covers up many

errors in the refractive appliances but only at the expense of the eye itself.

To the second subdivision I would particularly draw your attention as it is one of extreme importance and of considerable interest.

The class of cases I refer to are those in which myopia exists to an extremely high degree, and either from intent or from injury or old age one eye becomes cataractous with subsequent removal of the lens. We now have an extremely interesting condition of affairs. On one eye we have an highly myopic eye, calling for the application of a myopic glass of greater or less strength; in the other eye we have the reverse condition — an eye without any lens and demanding a convex glass. It was this very interesting condition of affairs which led Dr. Fukala of Pilsen Karlsbad, years ago to suggest[1] the removal of the crystalline lens in very high degrees of myopia, and the experience of Dr. Fukala in thus converting myopic eyes into hyperopic eyes has been rather satisfactory. It is not my intention to go into this subject for any minutiæ, but will refer my readers for fuller information upon the subject to any of the following: Graefe, *Archiv. für Ophthalmologie*, xxxvi; Casey A. Wood, *American Journal of Ophthalmology*, November, 1890; Mansfield, *Medical and Surgical Reporter*, Philadelphia Pa., vol. lxv. p. 934, December, 1891.

In May, 1892, it was my good fortune to see a case that has particular bearing upon this class of cases, and illustrates with marked emphasis the possibility of converting a myopic eye of high degree into an hyperopic eye and the cessation of all progression of the myopia with all its concomitant evils.

Mr. Charles P., age 40, "always has been near-sighted," some few years ago received a blow in left eye with production of traumatic cataract. Since that time there has been a gradual absorption of the cataract and now the pupil is quite clear, and all lenticular changes have been absorbed, the iris in the left eye is tremulous. Ophthalmoscopic examination reveals a healthy choroid, myopic crescent, optic nerve small and healthy, the right eye reveals on examination choroid very thin larger myopic crescent and the nerve somewhat congested.

V. R. Eye is very poor, reads No. 1 J. at 6-8 inches and for the distance has $\frac{1}{200}$ Snellen. V. L. eye $= \frac{1}{100}$ and is unable to read small print.

The application of -3.50 D. S. to the right eye improves vision to $\frac{15}{20}-$ Snellen, and the application of S. $+$ 1.75 D, to the left or cataractous eye gives $\frac{15}{20}$ vision.

I think this case illustrates very forcibly the fact that myopic eyes of high degree can be converted into hyperopic eyes and much benefit result, and what nature has done in the removal of this lens cannot surgery do equally as well as far

[1] (Graefe, *Archiv. für Ophthamologie*, xxxvi.)

as result goes if we take all the necessary antiseptic precautions.

It is not so very rare for a myope to have single cataract, and when through the course of age such an eye has a cataract, and the removal follows in its usual way, similar conditions are produced to those in the above case, and when so produced the application of a convex glass to one eye is called for and a concave glass meets the requirements of the other eye. Now, when such conditions exist and are so corrected we have the two eyes working under different conditions, and yet no discomfort results, yet we know in some cases vision must be carried on by one eye and binocular vision is not maintained, still the nearer we bring the two eyes to the normal standard, the nearer the two eyes approximate in ability, the less will the two eyes work separately. If one eye has $\frac{1}{30}$ and the other $\frac{1}{15}$ vision for the distance, will they not work more harmoniously than if they be more widely different? Cannot both eyes work when $\frac{1}{30}$ vision is required, and only the one when better vision is needed? Hence we obtain more perfect binocular vision, when, in such a class of cases as the latter ones I have enumerated, we bring the two eyes to a more equable standing and nearer the normal condition.

The subject is an important one, and to my mind the retention of binocular vision is dependent in the vast majority of cases to the maintenance of the muscular equilibrium. Of course the nearer the eyes are brought to the natural and normal standard, the less work is imposed upon the muscular apparatus.

327 N. Charles St.

ANNALS OF OPHTHALMOLOGY AND OTOLOGY

A QUARTERLY JOURNAL OF PRACTICAL OPHTHALMOLOGY, OTOLOGY, RHINOLOGY AND LARYNGOLOGY.

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CLINICAL NOTES.

AN UNUSUAL CASE OF DISLOCATION OF THE LENS.

By Dr. Cassius D. Wescott.
CHICAGO.

The following case is reported because of the peculiarity of the accident and the unusualness of the specimen.

The patient was a farmer and, upon presenting himself, stated that five days before, while attending his cattle, a young cow had hooked him in the eye. His family physician had told him that the eye was destroyed, and sent him to the city for its removal.

Upon examination a large, ragged wound was seen in the sclera, below and a little to the nasal side of the cornea, as seen in Fig. 1. The anterior chamber was occupied by a blood-clot and the iris could not be seen. The cornea was intact, but hazy; the wound was closed by a plug, composed of blood-clot and lymph. The globe was soft and shrunken. The eye was easily enucleated. There was no other wound in the sclera, the horn having pierced the anterior wall of the globe only.

The specimen was put in alcohol, where it remained undisturbed for three or four weeks. Upon bisecting it I was

FIG. 1.

surprised to find that the crystalline lens was encysted outside of the sclera, and that, in making the section, I had divided

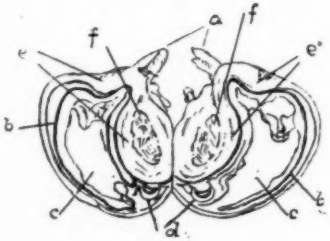

FIG. 2.
a, optic nerve; b, choroid; c, blood-clot occupying cavity of globe; d, iris; e, sclera; f, lens.

it, as shown in Fig. 2. It had evidently escaped from the scleral wound, slipped back between the ocular conjunctiva and the globe and become encapsulated in a mass of imflammatory exudate.

551 Jackson Boulevard.

REFLEX AMBLYOPIA.

By J. Walter Park, M. D.

LATE CLINICAL ASSISTANT ROYAL LONDON OPHTHALMIC HOSPITAL, OPHTHALMIC SURGEON TO HARRISBURG HOSPITAL AND CHILDREN'S INDUSTRIAL HOME, HARRISBURG, PA.

The very interesting articles by my friend, Dr. C. A. Wood, of Chicago, Ill., on the "Toxic Amblyopias," which have appeared in the *Annals of Ophthalmology and Otology*, during the past summer, recall to my mind a few very interesting cases of reflex amblyopias, one of which was especially so, and came under my care while at the Royal London Hospital, in June, 1889. I have had two cases in private practice since that time, but as they differ merely in a few symptoms, I will give the report

of the case above mentioned as recorded in my note book at that time, and the treatment of the same until the discharge of the patient.

Mrs. L.; aged 41 years; widow; principal employment, dress-making; family history good in every respect. I made especial inquiry as regards hysteria, but could find no trace of any. She first came to the hospital in June, 1889, complaining of headaches, blurring of type and dimness of vision for close work. Had symptoms of asthenopia and especially in R. E. R. E. V. $=\frac{6}{9}$. L. E. V. $=\frac{6}{6}$ with a manifest hypermetropia of sph. + 1.5C. D. I prescribed for her the following lenses. R. E. sph. + 1.50 $=\frac{6}{6}$, L. E. sph. + 1.50 $=\frac{6}{6}$, and advised her to wear them constantly. On June 28th, she returned and said that three or four days after wearing her glasses she noticed vision of R. E. failing, and failing very fast up to the time she returned. An examination showed the following: R. E. V = counting of fingers at ten inches only, in outer and lower field of vision, and in other parts of field, motion of hand only. Pupil acts imperfectly to light, and a slight amount of divergent strabismus visible. Her vision for colors was normal in L. E. Ophthalmoscopically there was nothing of a pathological nature to be seen except a slight hazy condition of the entire retina, and the borders of the optic disc slightly obscured. Her field of vision was now taken for first time, which was quite limited. The case was examined by five Ophthalmic surgeons, and the majority of them differing as to their diagnosis of the case. Supposing that it might be a case of retro-bulbar optic neuritis, she was given two and a half grains each of potassium and sodium iodide three times a day and requested to report in a week's time. Patient returned July 5th, with no improvement of vision. To-days perimetric chart showed field of vision more contracted, and vision worse than the week previous.

By suggestion of Dr. Lindsey Johnson, I carefully examined her teeth and found in the right superior maxillary the roots of five teeth which had been filed down level with the gums, and she was wearing an artificial set of teeth over these. I ordered all of the teeth to be extracted and to return in four days. Patient returned July 9th with vision somewhat improved. July 16th considerable improvement. Patient could count fingers at two and one-half feet on nasal side of field. Patient did not return until July 26th when the perimeter showed an almost normal field of vision. The last visit she made to hospital was on August 30th, when I found her entire field of vision restored and prescribed for her the following lenses:

R. E. sph. + .50 ⊂ cyl. + .50 Ax. 180 $=\frac{6}{6}$.

iL. E. sph. + 1.50 $=\frac{6}{6}$. Ophthalmoscope showed the haziness of retina entrely gone, and border of disc clearly seen.

This was undoubtedly a case of amblyopia, due to dental irritation of the fifth pair. The pathology of these cases is not definitely known, but is supposed to be due to some vaso-motor disturbances of the retina, or centers of vision. I am inclined to think the former is generally the case. The other two cases I had in private practice, showed a similar hazy condition of retina, which also disappeared after the extraction of a few bad teeth on the same side in the superior maxillary. There seems to be some general anæsthesia of the retina in these cases. This was markedly so in the case just reported.

As a rule the field of vision in most cases becomes concentrically restricted, leaving the central field not much impaired; this, however, was not the case in this patient. Her field of vision diminished rapidly, and more upon the nasal side until it was practically gone, and then steadily began to

improve until entirely regained. There was no inconstancy in the restricted field, as is generally the case in such patients. The cases are also rare in which the amblyopia is so complete as it was in this one.

All treatment was of no avail until the removal of the teeth, when the patient made a complete recovery.

Last May, 1892, I wrote to the patient inquiring as to the present condition of her eyes, and received a reply in the early part of June, 1892, saying that she was still wearing the glasses I prescribed for her, and that she had no return of her former symptoms, which was then three years ago.

32 North Second street.

THE ATTEMPT TO CORRECT HYPERMETROPIA AND HYPERMETROPIC ASTIGMATISM IN PATIENTS UNDER FORTY, WITHOUT RESORTING TO A MYDRIATIC.

By Frank D. Stannard, M. D.

INSTRUCTOR IN OPHTHALMOLOGY, CHICAGO POLICLINIC.

The observation of men connected with post-graduate schools will, I think, bear me out in the statement that now, more men in proportion to the entire number in attendance, devote themselves to ophthalmology than was formerly the case; of these, the majority purpose more particularly to do refraction work. It is to them I would address myself.

In most hypermetropic patients under forty years of age we find little, if any, manifest error. The spasm of accommodation is so marked and persistent that they will accept practically nothing of their correction.

Without any indication as to the readiness with which this spasm yields to the influence of a mydriatic, the oculist is considerably at sea concerning how much of the full correction he shall prescribe, assuming that he may have perfect confidence in his measurement with the ophthalmoscope, and (if astigmatism exists) the Javal ophthalmometer.

But when we reflect that this latter instrument so frequently gives much more astigmatism than for which the patient will accept cylindrical correction, we may well ask, how can they gauge their correction so as to relieve the headaches, blurring of letters, photophobia, etc., symptoms significant of eye strain.

I fancy that this question would indeed be difficult to answer satisfactorily. It has been my fortune this year to have had as patients a number of hypermetropes under forty, who have been examined by oculists, and glasses prescribed widely at variance with the patient's error.

In each of these cases no mydriatic had been employed; in three of them, concave or myopic sphericals or cylinders of a dioptric or less had been prescribed.

In the other cases, convex sphericals correcting only a small portion of the hypermetropia were ordered and the astigmatism allowed to go uncorrected.

In each of the first three cases the patient was unable to wear his spectacles, and in each of the other cases the patient's symptoms were not relieved by the wearing of the correction.

I criticise only casually the misfitting of the first three cases, but I do assert that had a mydriatic been employed, ignorance of ophthalmoscopy or retinoscopy would not have resulted in prescribing so erroneously.

I know that many patients object decidedly to the use of atropine, and I appreciate that in many cases it would be next to impossible to submit to the loss of time, and deprivation from close work entirely, for ten days or two weeks. At the same time, what excuse can the doctor offer who assures the patient that a mydriatic is unnecessary, and then flagrantly misfits him.

I think many times that the doctor ignores any mydriatic but atropine, or that, with the homatropine and cocaine discs containing of each $\frac{1}{10}$ of a grain, he can so efficiently paralyze the accommodation, combining speed with transitory effect.

Dr. Casey A. Wood was, I believe, the first to prescribe and write on the use of these discs.

By the use of one to three of these discs in each eye within 90 minutes, in the majority of cases we may sufficiently overcome the spasm of accommodation, thus averting the necessity of such blunders as those previously noted.

If we test the patient a half hour after the insertion of each disc we will be guided as to the readiness with which the spasm yields, and thus to the probable amount of a full correction that the patient will tolerate. This can all be ascertained at one visit, and therefore it is about as simple to do as to omit.

As to the effects, they disappear in from twelve to forty-eight hours.

In two of the above cases, the doctor assured the patient that a mydriatic was unnecessary, and then calmly proceeded to prescribe concave cylinders of less than a dioptric, the only lenses the patient would accept at all.

The actual correction in each case as afterwards given, was convex sphericals approximating +2.50 D. combined with convex cylinders from +.75 D. to +2.25 D. which the patient has since worn constantly, with entire relief from the former distressing symptoms, the spasm having gradually succumbed to the use of the spectacles.

VENETIAN BUILDING.

PROGRESS.

NOTES FROM FOREIGN OPHTHALMIC JOURNALS.

By Casey A. Wood, C. M., M. D.

PROFESSOR OF OPHTHALMOLOGY, CHICAGO POST-GRADUATE MEDICAL SCHOOL; OCULIST AND AURIST ALEXIAN HOSPITAL, ETC.

ATROPINE AND GLASSES IN MONOCULAR DIPLOPIA.

In the July number of the Annals appeared among the reviews a notice of Prof. Galezowski's paper in which he stated that many cases of monocular diplopia are amenable to treatment either by cycloplegics, whereby accommodative spasm is relieved, by correction of the existing refractive error or by both methods. I ventured to ask readers of this Journal to inform me whether such was the case in any of their patients exhibiting this symptom and have received, among other replies, the following from Dr. Würdemann of Milwaukee: "I have lately had a case in which Galezowski's expedient yielded negative results. The atropine was used with the refractive test.

"Miss S., æt. 22, under observation from May 15 to June 2, 1892. Monocular diplopia following a fall from wagon (she reached the ground in a sitting posture) about a year ago. She noticed something the matter with the right eye within a few days but did not observe vertical double vision in R. E. until about two months ago. Ophthalmoscopic examination revealed nothing abnormal. Vision, R=$\frac{6}{20}$; V. L =$\frac{6}{6}$. Under atropine R=$\frac{6}{20}$; V. L.=$\frac{14}{6}$. Double vision in right persisted under atropine. Refraction R. cyl. 1.25, 115°; L. sph. 1.00. She was examined by various subjective and objective tests. Orthophoria for near and distance. No constriction of visual field.

"Glasses prescribed did not relieve diplopia which remained vertical, although somewhat masked by the better vision resultant from the lenses.

"I think Charcot's theory of a hysterical cause could be here excluded, and the lesion must be acknowledged as back of the visual organ."

LATE APPEARANCE OF SYMPATHETIC OPHTHALMIA.[1]

A case of interest as well as of warning to all ophthalmologists is detailed by Dracoulides of Constantinople. In October, 1891, the author saw a man, æt. 43, blacksmith, who at the age of 23, had been injured in the eye by a splinter of red hot iron. The fragment passed through the cornea into the posterior part of the eye without producing incarceration of the iris.

After several days a traumatic cataract formed. Meantime the eye remained quiet though a circular synechia completely bound the iris to the anterior capsule. For twenty years the foreign body remained in the eye without producing the least irritation, when suddenly the organ began to be painful and tender on pressure about the ciliary region. The patient, after a time, applied for advice not regarding the lost eye but on account of more recent troubles which had appeared in the better eye. He had excessive photophobia, marked lachrymation, pericorneal injection and decided diminution of vision. An ophthalmoscopic examination showed nothing abnormal.

[1] Forme tardive de l'ophthalmie sympathique, *Les Annales d'oculistique; juillet, 1892.*

He was strongly urged to have the injured eye removed at once but refused to do so, preferring instead internal medication. In spite of remedies his visual acuity continued to diminish and finally an acute iritis showed itself in the sympathizing eye. This soon spread to the ciliary body and choroid.

Three weeks after the first examination patient returned saying that he would submit to the enucleation. A fundus examination now showed a slight haze of the vitreous body and papilla although when first examined nothing of the kind could be seen. Enucleation was done November 10th. The eye was carefully dissected and in addition to the cataract a calcareous deposit was found to envelop the small piece of iron.

Immediately after the operation patient was put on a course of potassic iodide with mercuric iodide in large doses. This treatment was continued for two months at the end of which time the photophobia, the lachrymation, the ciliary injection, and all the phenomena of the migratory ophthalmia had disappeared.

Apropos of the foregoing, Weiss[1] has a very sensible article on the early diagnosis of sympathetic ophthalmia. Among other items of interest he gives the history of a case where removal of the injured eye five days after the accident did not prevent infection of the other eye *eighteen months subsequently*.

PARTIAL OPTIC NERVE ATROPHY FOLLOWING HÆMATEMESIS.[2]

DR. SOMYA. This article includes a history of three such cases and furnishes evidence of the well known fact that whenever from any cause the optic nerve is cut off from its proper nutritive supply it is very liable to undergo atrophic degeneration.

Case I. Man, 53 years old, had November 28, 1891, hemorrhage from the stomach since which time he has noticed a failure of sight in the left eye. Four weeks after the attack he could count fingers at one foot and only in the upper part of the field. He said that he formerly had good sight in the left eye but this could not have been normal vision as he was the subject of diffuse vitreous opacities and myopic astigmatism. V. R., with correction $= \frac{2}{3}$ nearly. The ophthalmoscope showed the left papilla to be somewhat dulled and of a pale color; the vessels are narrower than normal. There are bilateral scotomata on both sides. The left field consists of a small sector above and external to the fixation point, while on the right side the scotoma corresponds almost exactly in size and position to the field on the left.

Cases II and III. Men aged respectively 52 and 56. Cases almost alike and for the sake of brevity may be described together. Two days after the hæmatemesis the visual defect showed itself in the shape of cloudy vision before the left eye. Improvement continued with the return of health in from 4 to 6 weeks when sight did not further improve. In both cases only peripheral vision suffered to any extent; in one case it rose to $\frac{1}{4}$, in the other to $\frac{3}{4}$. The perimeter and ophthalmoscope indicated about the same condition in both cases. The optic discs were pale. The vessels reduced in caliber. The fields were small with the fixation point for a center. Observers have differed as to the pathology of these cases. Hoffmann thinks the condition to be chiefly an interstitial retrobulbar neuritis with secondary atrophy of the nerve fibres, while Westhoff and Siegler regard it as a *primary fatty degeneration of the opticus* following ischæmia. The writer thinks all the stages of atrophy from cases of sudden and complete blindness following great loss of blood, to those of partial atrophy coming on more slowly, may be explained by the extent and duration of the optic anæmia. If the normal supply of blood to the capillaries is re-established before organic alterations have actually taken place the functions of the nerve may

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[1] Zur Diagnose der sympathischen Ophthalmie, *Archiv. für Augenheilkunde*, Bd. xxv.

[2] Ueber partielle *Atrophia nervi optice* nach Hämatemesis. Centralblatt für pkt. Augenheilkunde, Aug., 1892.

be restored; if not a negative scomata, corresponding to the tissue changes, remains. The September number of the same magazine contains some remarks by Hirschberg on the same subject.[1]

NOTES FROM AMERICAN OPHTHALMIC JOURNALS.

By B. E. Fryer, M. D.

KANSAS CITY, MO.

FIVE CASES OF KERATACONUS TREATED WITH GALVANO-CAUTERY.

Dr. H. Knapp (*Archiv. of Ophthalmology*, No. 4, Vol. xxi.) This is a very interesting and useful paper by Dr. Knapp giving his experience with the use of the galvano-cautery in the treatment of this corneal trouble.

Dr. Knapp concludes his paper as follows:

"These six operations are it seems to me not without suggestive value. Galvano-cautery at the present time appears to be in greater favor than any other method, particularly in England. Yet, like all other procedures it has its great dangers. If the cauterization is only superficial, or consists in a mere perforation of the apex, 'it is insufficient and has to be repeated.' If the cauterization is deep, especially with a large perforation the closure is slow, and the inflammation and its consequence may be more or less severe, including sloughing of the cornea. Anterior and posterior synechia are not infrequent, and may require an iridectomy, which also for optical purposes may be desirable in some cases. The removal of a piece of the protruding cornea by excision or trephining may yield good results. I have not learned in what percentage,— but I know, not from my own experience, that eyes have been lost by panophthalmitis following this procedure. The cauterization which acts by contraction of the cicatrix, seems to be the safest method. Galvano-cautery is, in my opinion preferable to the lunar caustic of von Graefe. Perforation of the cornea with its consequences, anterior and posterior synechiæ may be avoided, as our last two cases show. Better to cauterize carefully and, if relapses occur repeat the operation on the same place. The scar is well circumscribed and the iridectomy useless. The oval electrode seems a good instrument. The last case is a particularly remarkable example of smooth healing and almost perfect success in the treatment of this dreaded disease." He uses an oval electrode, made by Meyrowitz. With this electrode the application of the instrument is more easily and satisfactorily made than with other patterns of the platinum tip.

NOTES FROM FOREIGN OTOLOGICAL JOURNALS.

By T. Melville Hardie, B. A., M. D.

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Katz (*Ueber die Behanding chronischer Ohreneiterungen. Therap. Monatshefte*, May, 1892.)

It is the aim of this Journal to provide material for the non-specialist as well as for him who will not read this, and a few extracts from an article on so common a subject as chronic purulent discharge may be in order. As a preliminary to exact diagnosis, thoroughly cleanse the ear with ¾ per cent.

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[1] Ueber Erblindung nach Blutverlust. Centralblate f. prakt. Augenh. September, 1892.

lukewarm salt solution (lukewarm water is not hot enough; it should be just uncomfortably hot to the finger; but experiment. Lukewarm water will frequently cause pain and dizziness. Rev.) When these last are caused and the fault is not the temperature of the water, and in narrow meati, the cleansing should be done with absorbent cotton. In complicated cases the cleansing should be followed by inflation with Politzer bag or catheter, or the middle ear may be carefully irrigated under very weak pressure. Antiseptic solutions are to be instilled only after the meatus is thoroughly cleansed of pus and dried. Pressure on the tragus will insure their entrance into the middle ear. For the personal use of the patient, and in children, Katz recommends as the most suitable a 1 per cent. solution of sulphate of zinc, a teaspoonful (warm) poured into the ear three times a day, or when the discharge is fetid a 1 per cent. solution of carbolic acid or 3 per cent. solution of boric acid. Where there is a tendency toward the formation of granulations in the mucous lining of the middle ear, acid boric 2.0, Spirit rectificationis, 98.0. Half a teaspoonful three times a day. The smaller granulations disappear under this treatment, the larger require snare or cautery. The degree of swelling of the mucous membrane determines the use of astringent or antiseptic. They are frequently alternated. The fluid should remain at least 5 to 10 minutes in the ear. If periostitis of mastoid threatens, injections are to be avoided and dry cleansing substituted. If the inflammation does not subside through the use of cold, an early Wilde's incision ¾ to 1 inch long is necessary. In swollen hyperæmic mucous membrane the application, by the surgeon himself, of a 5 to 10 per cent. solution of nitrate of silver frequently works wonders. The Jaenicke tetraborate of soda (referred to in the last number of the Annals but not obtainable here so far as I know) does best where the perforation is large and the membrane pale and atrophic, as is the case with ordinary boric acid. Absorbent cotton should always be worn in discharging ears, and forcible injections are to be avoided.

EARLY INCISION OF THE MEMBRANA TYMPANI IN ACUTE SIMPLE OTITIS MEDIA.

MOUNIER (*Annales des Mal. de l'Oreille, etc.*, October, 1892). In all cases of otitis media where simple inflation has not relieved the patient of tension in the ear and noises and re-established the normal time relation between the tuning fork heard by air conduction and by bone conduction, paracentesis is recommended.

This operation is preceded by cleansing the meatus by means of a tampon of absorbent cotton on an applicator which is dipped in a solution of corrosive sublimate (1 : 1000) or carbolic acid (1 : 50). Before the cleansing the membrane tymp. is painted several times with a 20 per cent solution of hydrochlorate of cocaine.

In the operation the ordinary rules are followed, excepting that instead of carrying the point of the bistoury in front of and below the umbo as recommended by certain aurists, the author prefers, following here the teaching of Hartmann, to perforate the membrane in the postero-inferior quadrant, in which the swelling almost always presents itself. The advantages of this situation are the following: 1. It is the point farthest removed from the wall of the labyrinth. 2. Puncture here rapidly relieves the congestion in the most important portion of the membrane.

The author thinks that early incision exercises a good effect upon the rapidity of the cure, and in consequence, upon the preservation of the hearing.

NOTE SUR LE ROLE DE L'APPAREIL DE CORTI DANS L'AUDITION.

BEAUREGARD (*Bull. de la Soc. de Biologie*, Juin, 1892). The author's views differ somewhat from the more commonly accepted theories of Helmholtz and Gelle. The acuteness of hearing in various animals was observed and a comparison of histological preparations of the middle ear of these animals undertaken. In animals whose hearing power is extraordinary a corresponding development of the organ was noted; in-

those whose hearing power is obtuse the membrane was smaller. Beauregard concludes that the organ of Corti plays a very considerable rôle in the perception of sound.

THE AUDIPHONE AS APPLIED TO OTOLOGICAL DIAGNOSIS.

GELLE (*Annales des Mal. de l'Oreille, etc.*, July, 1892). Seventy-two persons extremely deaf were examined to test the diagnostic and prognostic value of the audiphone; of these 48 heard speech easily by the use of the audiphone, 24 were not benefited; 5 of the 24 perceived the tuning fork placed on the audiphone; 6 could hear speech with audiphone after treatment of the tympanic cavity but not before; 3 or 4 somewhat improved by audiphone alone had their hearing power greatly enhanced by politzerisation, etc.; 5 who did not hear tuning fork by air-conduction at all heard speech with aid of audiphone; 19 heard speech remarkably well with audiphone who could not hearing tuning fork on vortex or mastoid; 10 not benefited by audiphone would hear tuning fork slightly. In 17 of the 48 benefited the hearing was better in a noise, on the train, etc. The author concludes that the audiphone is superior as a usual thing to all other diagnostic tests. The difference between acute and rapid and exact perception and that which is not, the persistence of function of the nerve and the existence of an obstacle to hearing in the conducting apparatus may all be demonstrated by means of this instrument.

Its usefulness is not less in determining the prognosis. We may, he thinks, without being too optimistic, conclude that in the class of cases whose hearing power is markedly enhanced by use of audiphone, persistent benefit may be promised. The classical medical treatment will in 50 per cent. markedly ameliorate the deafness, but we are to remember that these results are slow to obtain, always limited in degree, and often precarious. The deafness is progressive, there is always the possibility of recurrence and with each return the possible permanency of the lesion. What furthermore is to be done for the other 50 per cent? If the auditory nerve is in good condition, we may briefly answer, the radical operation.

INDICATIONS FOR OPENING THE MASTOID APOPHYSIS IN INFECTIOUS OTITIS.

ORGOGOZO (*Annales des Mal. de l'Oreille, etc.*, November, 1892). This article is very largely based upon the discussion of a paper read by Politzer before the Paris Society of Otology and Laryngology. The arguments for early and wholesome operation as presented by Politzer and Chatellier, as well as those of the more conservative school of Gelle, Loewenberg and Pomeroy, are detailed, and the symptomatology upon which a diagnosis is based is fully if somewhat discursively presented. The author thinks that the opening of the apophysis in acute suppurative otitis should be preceded by energetic local treatment (ice, myringotomy, intra-tympanic irrigation, etc.), which failing, operation is indicated.

The suggestion of a comparison of the hearing of those operated upon and those not operated upon (which would be valuable if it were not impracticable) is made. A few of his conclusions are: —

1. Operation is earlier indicated when the lesion is infectious.

2. Operate when after a spontaneous remission or following paracentesis there is a rapid return of intense mastoid pains, abundant purulent discharge, etc.

3. Operate when in the tenth to the twentieth day of a suppurative otitis cerebral symptoms supervene (coma, delirium, cephalalgia, vomiting, elevated temperature), without reference to the local manifestations.

NOTES FROM CURRENT AMERICAN OTOLOGICAL LITERATURE.

By Leonard A. Dessar, M. D.

VISITING LARYNGOLOGIST AND OTOLOGIST TO MT. SINAI HOSPITAL DISPENSARY; VISITING LARYNGOLOGIST TO ST. MARK'S HOSPITAL; FORMERLY ASSISTANT SURGEON, MANHATTAN EYE AND EAR HOSPITAL, ETC., ETC.

EARLY DIAGONOSIS OF MASTOID DISEASE AND OPERATION AS A LIFE-SAVING METHOD OF PREVENTION OF PYÆMIC AND MENINGITIC COMPLICATIONS.

Dr. Milton Greene (*Journal of the American Medical Association*, Vol. xix, No. 20) claims to diagnose mastoid disease by the presence of certain pathological conditions, such as bulging and swelling of the upper and back part of the tympanic cavity, even in the absence of pain and swelling over the mastoid process. He operated successfully in four cases, finding pus in the mastoid cells; while another case in which there was no operation resulted fatally. The author believes that mastoid disease is more common than is supposed, the condition being frequently overlooked on account of the indefinite character of the symptoms. He always employs the chisel in opening the mastoid process, commencing at the top and cutting upwards and forwards. He quotes a case where the lateral sinus was accidentally opened with a Hamilton bur-drill, causing severe hemorrhage which was arrested by placing the finger in the opening, followed by tamponing with sublimate gauze. Two days later the wound was reopened and the operation continued without recurrence of hemorrhage; the patient recovered.

DISORDERS OF THE EARS IN TYPHOID FEVER.

Dr. Beverly Robinson (*N. Y. Medical Record*, Vol. lxii. No. 10) draws attention to the fact that in the treatment of typhoid fever the general practitioner pays but very little attention to the condition of the ears. These are apt to be more or less secondarily affected by a condition of hyperæmia with inspissated and fœtid secretions from the nose and throat; this occurring more frequently in adults than in children. Noises in the ears and more or less pain may be marked features of aural complications in typhoid fever; or a certain amount of acute local inflammation of the external auditory canal may be present. Otoscopic examination should be made in every case of typhoid and, if inspissated cerumen be found, it should be removed. The membrana tympani, throat and nose should be carefully watched, especially during the second and third week of typhoid. Author recommends the following treatment: If the tympanic membrane be inflamed, douching should be resorted to with a fountain syringe containing water at 100° to 110°F., the patient being in a semi-recumbent position.

The addition of one-half teaspoonful of bicarb. soda or boric acid to each pint of water is useful in allaying inflammation. From one to two quarts should be used at each douching. After ten douchings inflammation frequently disappears. If the ear appears inflamed and there is evidence of nasal or pharyngeal catarrh, a mild detergent or disinfectant spray should be used through the nose into the naso-pharynx. The spray fluid should be Dobell's solution or Seiler's tablets, or a solution of bichloride of mercury, one part to 5,000, 8,000 or 10,000 of water, according to circumstances. Blood-letting or paracentesis and the use of the Politzer bag may be useful adjuncts in the treatment. If suppuration continues indefinitely, and despite the use of solutions of zinc, alum, etc., the condition should be treated with insufflations of boric acid.

In a clinical lecture translated from the French by Dr. Illoway (*Cincinnati Medical News*, Vol. xxiv. No. 287), Charcot gives a history of a case of

Menière's Disease. He recommends twice daily after meals, about 4 grs. of quinine sulphate. This is to be continued for fifteen days. The drug is then discontinued for eight days and then resumed as before. After four or five such periods of administration a cure is generally obtained. Under this treatment the noises and the vertigo are often aggravated but the latter soon improves. In very severe cases sulphate of quinine does not act as quickly as stated, and, at times, must be given for seven or eight months to obtain beneficial results.

TREATMENT OF OTITIS MEDIA.

DR. J. H. CLAIRBORNE (*N. Y. Medical Record*, October 8, 1892) recommends the following:—

I. Five to ten drops of a 10% solution of cocaine, warmed and instilled into the outer ear and retained for ten minutes.

II. Hot solutions of boric acid instilled into the outer ear. Spongio-piline soaked in hot water to be applied over the whole ear surface.

III. Inflation with the Politzer bag or by the continuous method with the Eustachian catheter.

IV. Administration of a drastic dose of Epsom salts after the acute stage blisters behind the ear may be useful.

COCAINE IN THE TREATMENT OE ACUTE INFLAMMATIONS OF THE EAR.

DR. JULIUS WOLFENSTEIN (*N. Y. Medical Journal*, Vol. xvi, No. 19) recommends cocaine in acute inflammations of the ear to ameliorate the pain accompanying ear affections: he claims that suppuration in otitis media may be aborted by the frequent use of cocaine. Among one hundred cases of otitis media and acute myringitis treated by him, in only 4 to 5 % of the cases suppuration occurred. In two or three of these suppuration was due to neglect on the part of the patient. Of one hundred cases, eighty-five occurred in children from five to fifteen years of age. Five to six drops of a 5% solution of hydrochlorate of cocaine, best heated, are poured into the ear and repeated every few hours. Author at times employs stronger solutions without observing toxic effects from their use.

THE RELATION OF AURAL AND NASAL AFFECTIONS.

DR. R. E. SWINBURNE (*N. Y. Medical Record*, Vol. lxii, No.), bases his results on one thousand cases of otitis media following chronic naso-pharyngitis. He found pathological conditions of the nasal and pharyngeal mucous membrane to account for the aural troubles in 95% of the cases. In 77% various forms of rhinitis; in 14% deviation of the septum; in 3.7% throat complications of the exanthemata; leaving a balance of 4.7% without assignable cause.

The development of inflammation of the tympanic membrane from nasal or pharyngeal affections has been explained three ways:

I. By direct extension of the inflammatory process of contiguity of tissue.

II. Rarefaction of the air in the post-nasal space and tympanum during inspiration, due to nasal stenosis.

III. From obstruction of the mouths of the Eustachian tubes by adenoid vegetations.

Author's belief is that it is always due to the first cause and never to the other two.

PEROXIDE OF HYDROGEN AND ITS USE IN EAR DISEASES.

DR. WALTER B. JOHNSON (*The Journal of the American Medical Association*, Vol. xix, No. 18) states that pus and blood corpuscles which come in contact with the peroxide of hydrogen solution are immediately destroyed by chemical action. The full strength fifteen volumes may be used. It may be introduced by syringing, instillation or by means of a pledget of cotton.

Froth will appear as long as there is purulent or albuminoid matter for the peroxide to act upon. No toxic effects are produced. Pathogenic organisms are destroyed. Applications should be made daily in the ear and patients should be instructed to drop five drops of a solution in the ear three times a day. It should be used in purulent otitis media and in the treatment of mastoid diseases, after the incision is made. Special care should be taken that instruments, applicators, spray apparatus should be perfectly clean. Mixtures of glycerine and peroxide of hydrogen should be made fresh every two or three days to prevent the formation of formic acid. Only silver, hard rubber, glass or porcelain should be used for the application of the peroxide.

NOTES FROM CURRENT LARYNGOLOGICAL AND RHINOLOGICAL LITERATURE.

By M. D. Lederman, M. D.

ASSISTANT TO THE CHAIR OF LARYNGOLOGY AND RHINOLOGY, NEW YORK POLYCLINIC; ASSISTANT LARYNGOLOGIST TO THE MT. SINAI HOSPITAL DISPENSARY; ASSISTANT TO THE EAR DEPARTMENT MANHATTAN EYE AND EAR HOSPITAL.

TREATMENT OF DIPHTHERIA.

Ozegowski (*Journal of Laryngology, Rhinology and Otology*, Vol. vi, No. 10). During a period of ten years, the recorder has not had a fatal case of diphtheria. He credits this extraordinary result to his method of treatment; *i. e.*, applications are made every two or three hours to the diseased areas, with the following mixture:—

℞

Acid carbol (crystals).
Acid nitric (crystals).
Kali Iodidi aa.....3.00 to 5.00.
Cognac (fine champagne).. .....100.00.

Gargling with a solution of chlorate of potash or common salt, is also recommended. Milk is prohibited, lemonade being the drink allowed. This should be made of lemon juice.

DIPHTHERIA, ETC.

A. Reiersen, Copenhagen (*Ibid.*). This writer advocates strongly the use of the galvano-cautery, as local treatment in this affection; or paquelins thermo-cautery, to be followed by use of disinfectant solutions, and also systemic treatment, if necessary.

ETIOLOGY OF PRIMARY LARYNGEAL CROUP.

Eugene Frankel, Hamburg (*Ibid.*). After making careful bacteriological examinations of four cases, all of which died from "true croup" (in all, the pharynx was free from pseudo membrane, but the larynx and trachea were covered with same), the author concludes:—

"That idiopathic croup of the larynx is etiologically identical with the laryngeal croup which is combined with the genuine pharyngeal diphtheria."

INDURATED CHANCRE OF THE LEFT NASAL FOSSA.

Dr. Moure (*Ibid.*). Chancres situated in the region of the nasal cavities are quite rare. The observer reports such an instance. "The lesion was situated on the quadrangular cartilage, where there was a fungous ulceration, the septum being thickened and tumefied. The ulcer was covered with psuedo-membraneous exudation, removal of which left a bleeding surface.

ANGINAS.

DR. FERRAS (*Ibid.*). The treatment suggested in these diseases is local applications of camphorated naphthol, and the administration of hyposulphite of soda (two to four grammes a day).

INFLUENCE OF NASAL STENOSIS ON THE GENERAL HEALTH.

W. SPENCER WATSON, F. R. C. S., ENG., M. B., London (*The Lancet*, No. xi, Vol. ii, 1892). In a most interesting paper, the author states that many forms of the disease, not obviously of nasal origin, have been cured, relieved or prevented by treatment successfully directed against nasal stenosis. After dwelling upon the variety of stenosis, and the symptoms produced by same, he adds in conclusion, "that intranasal obstruction is often an important element in the cases referred to (asthma, hay fever, etc.); that it is often overlooked, or if found, despised or made light of; and that it certainly should be sought for and dealt with, by local treatment, in a very large class of diseases, in which, up to quite recently, the influence has been more or less ignored." (This paper is indeed worthy of perusal in toto.— M. D. L.)

RHINITIS CROUPOSA.

DR. JOHN SEDZIAK, Warsaw (*Ibid.*). In a contribution on the so-called croup of the nose, the author states that this disease is an independent pathological process, having nothing in common with diphtheria. After examinations by a number of noted observers, they were unable to find the Klebs-Löffler bacilli in this affection. In a bacteriological examination, by the author, he discovered a culture resembling the "streptococcus pyogenes" (small vesicles). In one of the patients recorded, the membrane covered the entire septum on the right side, together w th the inferior and part of the middle turbinated bodies. It was thick, compact and whitish, bathed in serious acrid secretion. The mucous membrane not covered with the false membrane was reddened and swollen. The treatment consisted of wad tampous medicated with balasamum peruvianum (aa, glycerine), and ointment of resorcin (zincum oxidatum, acid boricum aa, 1.0, lanolin 30.0), following with insufflations of pure aristol. Good results followed in about two weeks. During the active process the membranes reformed but gradually disappeared.

PYOKTANIN IN DIPHTHERIA.

DR. JAENICKE, Gürlitz (*Merck's Bulletin*, Vol. v, No. 9). The solution of pyoktanin is applied to the membrane, by means of a tampon every two to five hours, according to how rapidly the blue coloration disappears. It is stated that on the second or third day of the treatment, the temperature fell to normal, the pains diminished, or disappeared, and the appetite returned. In severe cases, this treatment could not save the patient. The advantages claimed for pyoktanin are, its great antiseptic power over Löffler's bacillus; its tenacious properties; clinging to the diseased area, and buccal mucous membrane for a considerable period; and finally, its non-poisonous action.

CHRONIC RHINITIS.

DR. MONIN (*Ibid.*). The following combination is to be used as a snuff:—

℞

Menthol.
Citric Acid.
Lithium Carbonate.
Powdered Benzoin. aa

M.

S. Five or six pinches daily for each nostril.

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ATROPHIC RHINITIS.

DR. DESSAR (*International Journal of Surgery*, Vol. v., No. 5). The formula of Stoerk is recommended for douching purposes:—

℞

Sodii Salicylat.
Sodii Bicarb.
Sodii Chlorid. aa.....3ii.

M.

S. A knife-pointful to each cupful of water.

ACUTE LARYNGITIS.

DR. M. D. LEDERMAN, N. Y. (*Clinica lNotes*). In acute inflammation of the larynx and trachea menthol in combination with benzoinol, is very beneficial. The formula generally prescribed is:—

℞

Menthol, 3i to 3ii.
Benzoinol or Tincture Benz. Comp.....3i.

M.

S. Teaspoonful to the pint of steaming water, inhaled.

In subacute and chronic laryngitis and trachitis, oil of eucalyptol, or o of pine needle should be added to the above formula in the same strength.

DIPHTHERIA.

DR. S. J. RADCLIFFE (*The International Medical Annual, 1892*). In typical diphtheria, where the disease does not yield readily to local treatment, the author prescribes sodium sulpho-carbonate in doses of 3 to 5 grains, at short intervals, varied according to the age of the child. He administers alcohol in some form, at the beginning and keeps it up constantly to the end, without regard to the condition of the pulse.

DIPHTHERIA.

DR. CALDWELL (*Ibid.*). The following combination is recommended as an application to be used three times a day by means of a brush:—

℞

Papian.....3 ij.
Hydronaphthol.....gr. iij.
Acid Hydrochloric dil.....gtt. xv.
Aquæ dest. ad.....3 iv.

M.

S. Spray every hour unless patient sleeps.

THE FALSETTO VOICE.

DR. O. P. BENNETT, Chicago (*Medical Record*, Vol. xlii, No. 19). The author divides the voice into three registers: 1st, The lower chest register; 2d, the throat register; 3d, the upper chest register. These are so named because the singer feels as though the voice came from the regions designated. The male voice should change from the upper chest registered to the lower or deep register, at puberty. If the voice remains unaltered, however, we have the condition known as "falsetto voice." The author states that this condition "is undoubtedly due to an improper use of the muscles of phonation." Others believe it may be owing to some pathological condition of the upper air passages. Lincoln reports a case where the patient acquired a lower register by removal of a large hypertrophied pharyngeal tonsil. Dr. Bennett reports a case where the patient was able to phonate in the lower register by practicing in that register for a short period. He believes that the condition is "purely a physiological one, con-

sisting in the faulty use of the voice," and can be corrected by simply "convincing the patient that the lower and not the higher register is the normal one, and that if he so desires he can always use that register."

NASAL ASTHMA ALTERNATING WITH CIRCUMSCRIBED EDEMA OF THE SKIN.

DR. RETHI, Vienna (*Ibid.*). In the observer's opinion, the majority of cases of nasal asthma are due to some nasal nervous reflex. In the case reported, the patient's nose became obstructed with the attacks of asthma. Cauterization of the mucous membrane was performed, followed each time by a rather extensive oedema of the skin, or an asthmatic attack, alternating regularly until the nasal stenisis was completely relieved, when both sequela disappeared permanently.

A SUBSTITUTE FOR THE NASAL DOUCHE.

DR. BLOEBAUM (*Ibid.*). The method suggested by the author is the twisting of a long and thin roll of cotton onto a knitting-needle, introducing it into the nose, and leaving the cotton in the nose, after withdrawing the needle. This he does until the cavity of the nose is filled. This is also done to the opposite side. In fifteen minutes the mucous membrane secretes profusely, and the cotton tampons are then removed, bringing with them the crusts. Watery solutions are never used; salves being preferred, rubbed into the mucous membrane, or powders insufflated.

LOCAL TREATMENT OF PHARYNGEAL DIPHTHERIA.

(*Annals of Gynaecology and Paediatry*, Vol. iii, No. 11.)

The following applications are recommended, to be used every hour to the diseased surfaces:—

℞

Acid Salicylic.....gr. iij.
Alcohol.....q. s.
Glycerin.....ʒ ij ss.
Infus. Eucalypti.....ʒ iij ss.

M.

If the false membrane resists the above formula, this mixture should be substituted:—

℞

Ferri Chlorid.
Glycerin, aa

M.

Following this application, gargles of boracic acid (2%), or of lime water should be used.

SOME REMARKS ON THE APPLICATION OF THE GALVANO-CAUTERY IN DISEASES OF THE NOSE, THROAT AND EARS.

DR. JOHN ZEDIAK, Warsaw (*Journal of L. R. and O.*, Vol. vi, No. 11). After considerable experience with this method of treating diseases of the upper air passages, the author considers it the most important indication for the reduction of hypertrophied tissue found in these regions. In the treatment of nasal polypi he considers the galvano-cautery the method, "par excellence." The advantages claimed over the cold snare are: (1) it prevents relapses; (2) it causes less bleeding; (3) it is painless. He warmly advocates its application in hypertrophied conditions of the posterior ends of the turbinates, using this treatment to the exclusion of all others. The application is made by the aid of a rhinoscopic mirror. Hypertrophied tonsils are reduced by this means, as are also aural granulations or polypi. The fear of laryngeal oedema following its use, he states is absolutely without grounds. He voluntarily applies the galvano-cautery in tuberculosis of the larynx, especially in cases of infiltrations, ulcers and growths.

ON MOLLER'S GLOSSITIS SUPERFICIALIS.

DR. HAHN, Puritz (*Ibid.*). The case reported was that of a patient, twenty-five years old, who for one and a half years complained of pains in the tongue. The examination revealed the arcus palato-glossus and the papilla circumvallatæ very red, the vessels injected, the papillæ swollen. The tongue at one part showed a higher coloration than normal. Inflammation of the pharynx existed. Application of menthol relieved the condition.

CONGENITAL OCCLUSION OF THE RIGHT CHOANA: GALVANO-CAUTERY OPERATION: DEATH SIX DAYS AFTER THE OPERATION.

DR. V. LANGE, Copenhagen (*Ibid.*). The right choana was occluded, in a nineteen year old patient, by a yellowish colored septum. Perforation of this anomalous defect was accomplished under chloroform anæsthesia, by means of the galvano-cautery. Free breathing followed the operation. The same evening the patient became feverish with headache. The next day meningeal symptoms developed. Death followed. No post-mortem was obtained. The author thought there was a sinus thrombosis.

LARYNGO-RHINOLOGICAL COMMUNICATIONS.

DR. HAJEK, Wein (*Ibid.*). The author has observed scrofulous ulcers of the pharynx. They are similar to tertiary syphilitic affection or the hereditary disease, but can be diffentially diagnosed, by not responding to specific treatment. They are sometimes cured by curetting, followed by application of lactic acid.

REFLEX SPASM OF THE GLOTTIS, FOLLOWING DISTENTION OF THE STOMACH.

DR. B. G. SETON, Punjaub (*Ibid.*). The spasm followed the eating of large sized pieces of meat. It came on in an hour, and was not relieved by fomentations over the larynx. Blisters over the course of the vagus, however, reduced the spasm, and an emetic was then given with immediate effect. The observer holds that the spasm was reflex in nature, and not due to direct pressure on the larynx, from the meat in the œsophagus.

PHARYNGO-MYCOSIS.

DR. F. I. KNIGHT, Boston (*Ibid.*). In this obstinate disease, the author has found nothing as satisfactory as the galvano-cautery. If possible excision is recommended. Delevan does not agree with the author. He has obtained better results from frequent washing with borax, also bichloride of mercury, and the most important factor, the correction of disturbed digestion.

ADENOID GRANULATIONS IN AN INFANT SIX WEEKS OLD: OPERATION.

DR. C. ASTIER (*Ibid.*). The child showed symptoms of croup; no fever or membranes present; no swelling of glands. Nasal respiration was nearly completely absent, and there was a flow of thick mucus. Symptoms existed since birth. It was difficult for the child to take nourishment. Growths were removed with small forceps, and nasal respiration was established. Child was able to take the breast. On the sixth or seventh day, patient was completely stifled and had violent fever. The throat was filled with thick mucus, and pharynx was very red. The introduction and withdrawal of the forceps revealed pus. The retropharyngeal abscess was incised, and the child was immediately relieved.

(Although the sequela in this instance is rare, the primary affection in young patients is quite common, and often overlooked. The causation of croupy attacks would frequently be found, if the finger was more often introduced behind the soft palate.— M. D. L.)

PROFESSIONAL NEWS.

In the November (1892) number of the "OPHTHALMIC RECORD" was published a valuable contribution, of 71 pages, to "CATARACT OPERATIONS IN OUR TIME," written by Dr. E. Landolt and translated by Dr. C. M. Culver. Those who were not so fortunate as to be subscribers to that most excellent journal at that time, may secure numbers containing Dr. Landolt's paper by sending fifty cents to the genial editor and publisher, Dr. G. C. Savage, Nashville, Tenn.

Dr. A. G. Hobbs of Atlanta, Ga., who so ably filled the chair of Ophthalmology, Otology, Rhinology and Laryngology in the Southern Medical College, for twelve years, has recently resigned the position.

Baron Leon Von Lenval (*N. Y. Medical Journal*, Vol. lxi, No. 13) has offered a prize of 3,000 francs for the best instrument for improving the hearing power of persons partially deaf. It is to be constructed on the principle of the microphone and must be convenient to carry. Instruments which are to compete for the prize should be sent to Dr. Politzer, president of the jury, in Vienna. The award of the prize and publication of the jury's decision will take piece at the Fifth International Congress of Otology, September, 1893. The members of the jury are: Dr. Politzer of Vienna, Dr. Gellen of Paris, Dr. Prichard of London, Dr. D. B. St. John Roosa of New York and Dr. Grazzi of Florence.

Dr. Bransford Lewis, the popular and enterprising editor of *The Medical Fortnightly*, has conducted a personal canvass over the entire State of Missouri and compiled an accurate list of physicians, dentists, druggists, hospitals and colleges, which he has published in book form, under the title of *The Missouri State Medical Directory*. The accuracy of the names and addresses of physicians, dentists, etc., greatly enhances the value of the book, and it contains other matter of interest.

The number of good original papers offered to the ANNALS continues to increase so that the reviews of current literature are very brief and condensed, but it is not our intention to neglect, in the future, the "Report on Progress," and it is to be regretted that the very complete and instructive review of the American and English Ophthalmic Journals by Dr. B. E. Fryer was crowded out of this issue. The enlarging of the journal and changing from leaded to solid matter impaired our method of estimating the number of words required for each page. We have crowded in more original matter than was intended, but we trust that our readers will appreciate the large number of good original contributions.

BOOK NOTICES.

DISEASES OF THE THROAT. By Francke Huntington Bosworth, A. M., M. D., Professor of Diseases of the Throat in the Bellevue Hospital Medical College of New York.

William Wood & Co. New York. Price, cloth, $5.00.

This is the second and concluding volume of Dr. Bosworth's "Treatise on Diseases of the Nose and Throat," the first volume having appeared two and a half years since.

As the author states in the preface, the same general plan that was observed in the first volume has been followed in the arrangement of this the second volume.

The book contains 823 pages, three colored plates and one hundred and twenty-five wood cuts.

The first section is devoted to the consideration of diseases of the fauces, including under the term that region which includes the oropharynx, the soft palate and faucial pillars and tonsils.

The second section is devoted to diseases of the larynx, while a third section is added in which the various surgical procedures are described which are resorted to for obtaining access to the oropharynx and larynx, and which involve cutaneous section.

The author has eliminated many of the confusing terms, which have crept into laryngological literature, by adopting the general rule of using such names of diseases as in themselves locate and describe the morbid process. He has thus substituted a definite for an indefinite nomenclature.

Those who are familiar with Dr. Bosworth's writings would expect a good book and in this they will not be disappointed.

TEXT BOOK OF OPHTHALMOLOGY. By Ernest Fuchs, M. D., Professor of Ophthalmology in the University of Vienna.

Authorized translation from the second enlarged and improved German edition. By A. Duane, M. D., Assistant Surgeon, New York Ophthalmic and Aural Institute.

D. Appleton & Co., New York. Price, cloth, $5.00; sheep, $6.00.

This work is divided into four parts:

I. Examination of the Eye.
II. Diseases of the Eye.
III. Anomalies of Refraction and Accommodation.
IV. Operations.

An appendix is added, describing instruments used in ophthalmology.

The instructions given in part III are inadequate for the refraction of our "neurasthenic" hypermetropic astigmatic American patients.

The chapter devoted to operations is not as full and complete as might be desired, but it will serve as a useful guide.

The part treating of diseases of the eye is all that could be desired in a "text-book."

While some parts of the book contains errors and omissions it shows the work of a careful conservative mind that has had many years of excellent clinical training and experience.

Dr. Duane, as translator, has done his work well.

The book is handsomely printed, well bound and fairly well illustrated.